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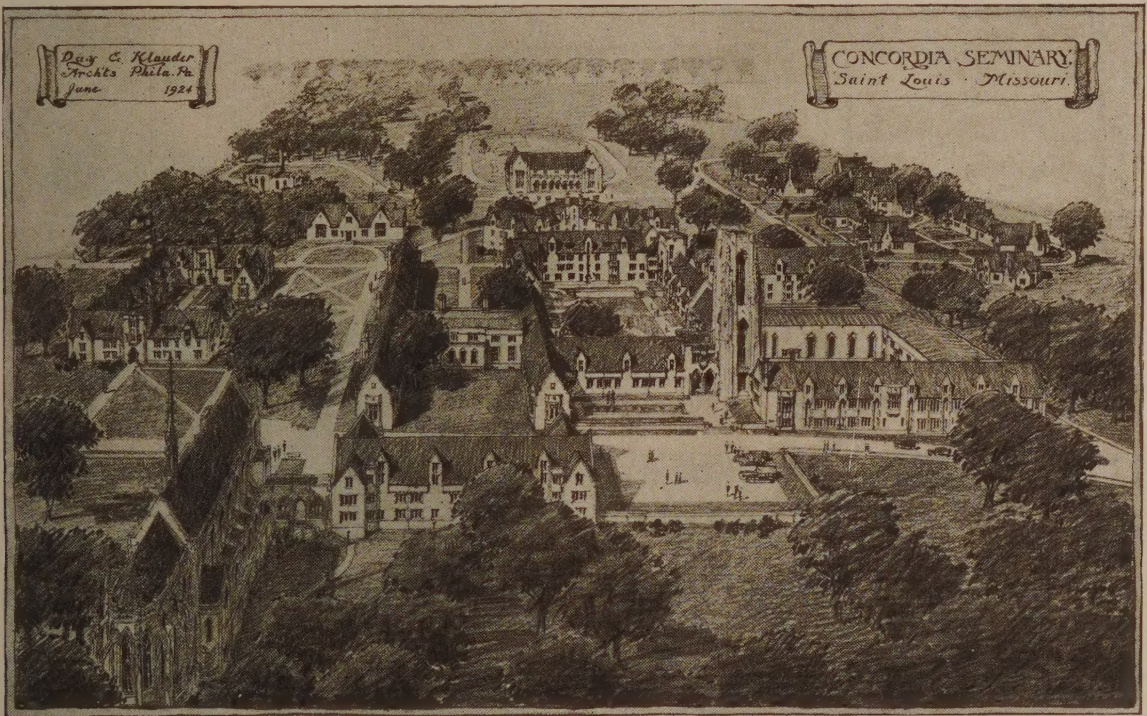
The Concordia Seminary, St. Louis, Missouri

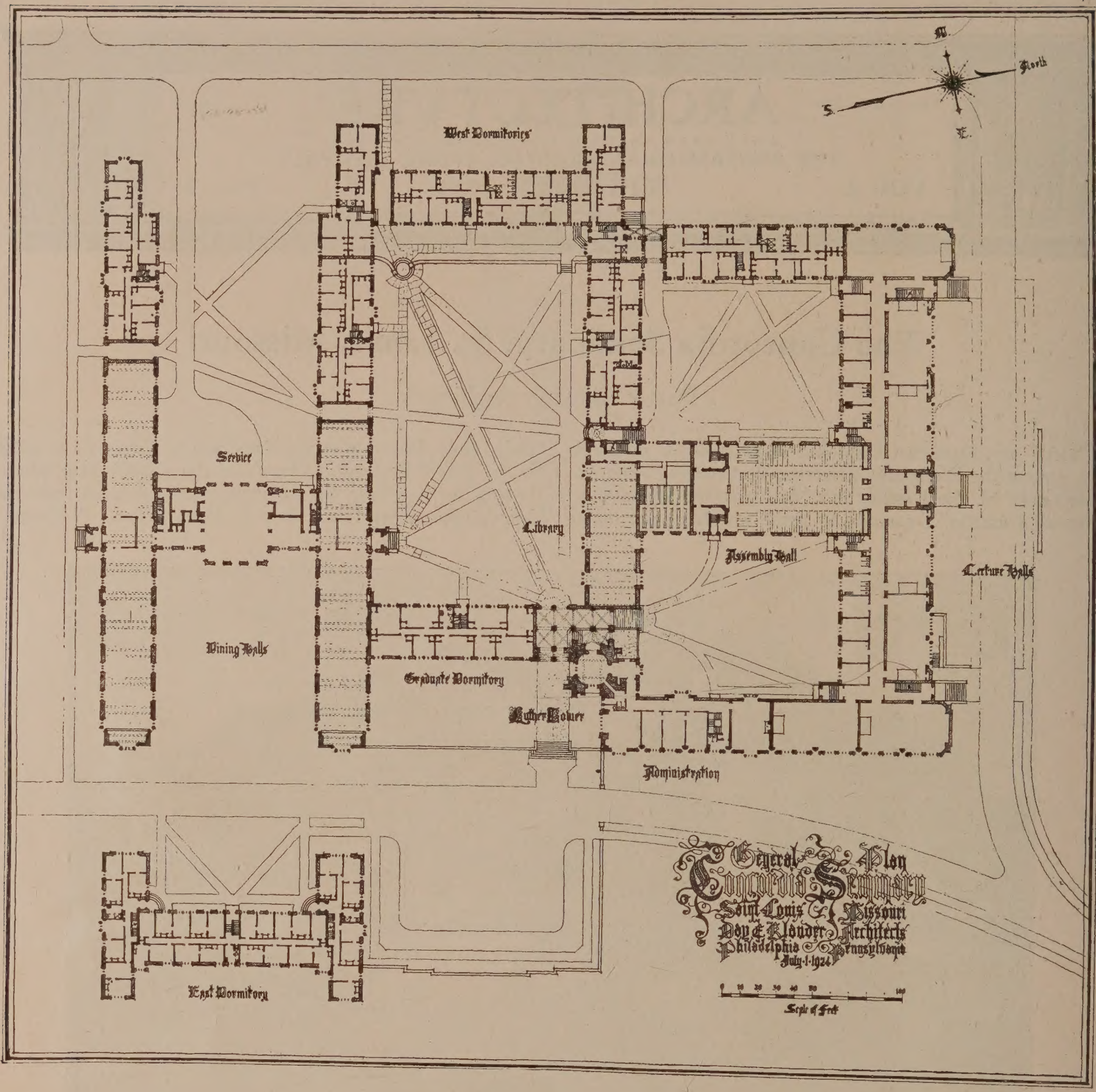
Day & Klauder, Architects

THAT the Lutheran Church stands third in numbers among the Protestant Churches in America, being exceeded only by the Baptist and Methodist denominations, comes as a matter of surprise to those who have not made a study of comparative church statistics. And that the largest and most costly theological seminary group owned by any Protestant church body is a Lutheran seminary, being built in what many still regard as our "far West," is likely to cause even greater surprise in the world of architecture and building. Yet Lutheranism is not a plant of recent growth in the United States.



Bird's-eye view.

A year before the *Mayflower* sailed from England a colony of sixty-six Danish Lutherans landed on the shore of Hudson Bay. In 1638, and forty-four years before William Penn founded Philadelphia, a colony of Swedish Lutherans settled on the site now occupied by the city of Wilmington, Del. Holy Trinity Church, dedicated at Christina in 1699, is the oldest Protestant church in the western hemisphere. It may be seen from the car window as the train from the North approaches the station at Wilmington. A German Lutheran settlement at New Amsterdam is referred to as early as 1642. The largest individual Lutheran body in the United States, the Missouri Synod, traces its origin to an immigration of Saxon Lutherans which took place in the year 1838. In the following year these settlers in Perry County, Mo., about one hundred miles south of St. Louis, built a college and seminary which stands in direct line of ancestorship to the new Concordia Seminary, the designs of which form the subject of this article. The Missouri Synod is a national body with churches in every one of our States and with a membership of 1,024,000 souls. At its national convention of 1923 the sum of $4,850,000 was appropriated



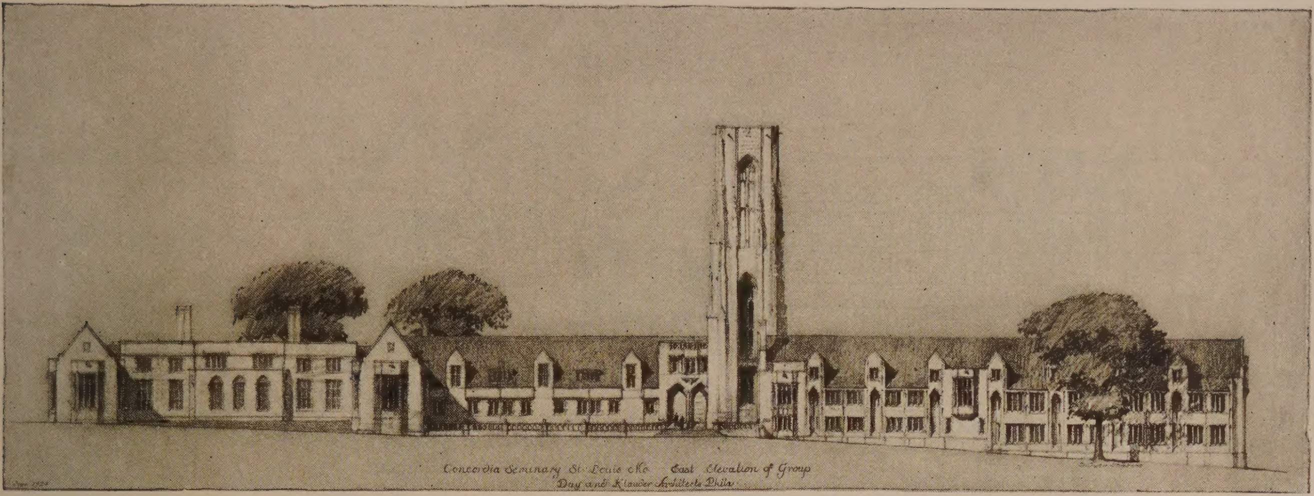
for the building of new colleges. Before the end of the year this sum was over subscribed by more than $1,000,000. It might be added that the doctrinal stand of this great body is of a most conservative kind, Modernism and Fundamentalism not figuring among its live issues. Its adherents believe that the system of Christian day-schools, offering a full grammar-school course in addition to the teaching of religion, is chiefly responsible for its inner cohesion and strength.

The resolution empowering the Synod's Board of Directors to remove Concordia Seminary to a new site was adopted in 1920. The move was made necessary by the steady increase in enrolment, now about 360. (Concordia Seminary and the Southern Baptist Theological Seminary of Louisville, Ky., are rivals for the first position, in point of enrolment, of all theological seminaries of the Protestant world.) A new seventy-two-acre site was purchased for $200,000. To the appropriation of $1,000,000 made in 1920, the Synod added another $1,500,000 in 1923, when estimates indicated that the new plant would require an expenditure of approximately $2,500,000.

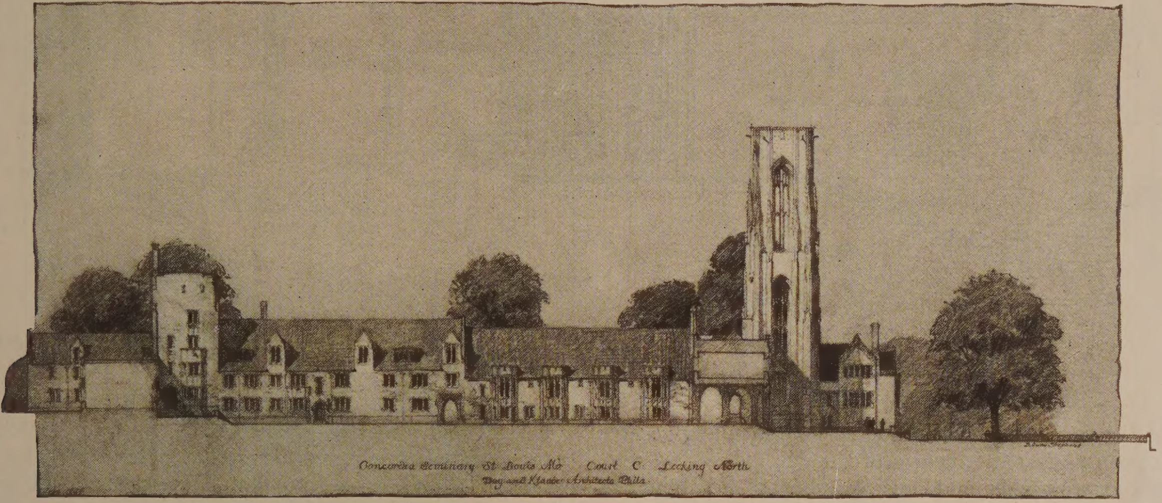
THE GOSPEL OF ARCHITECTURAL BEAUTY

The programme presented to the architects for the requirements of the Concordia Seminary were, that accommodations should be provided for 400 men, with possible future expansion to 800; the group of buildings to include residential halls or dormitories, lecture halls, assembly hall, dining halls and service building, chapel, infirmary, gymnasium, residences for professors, and a power-house.

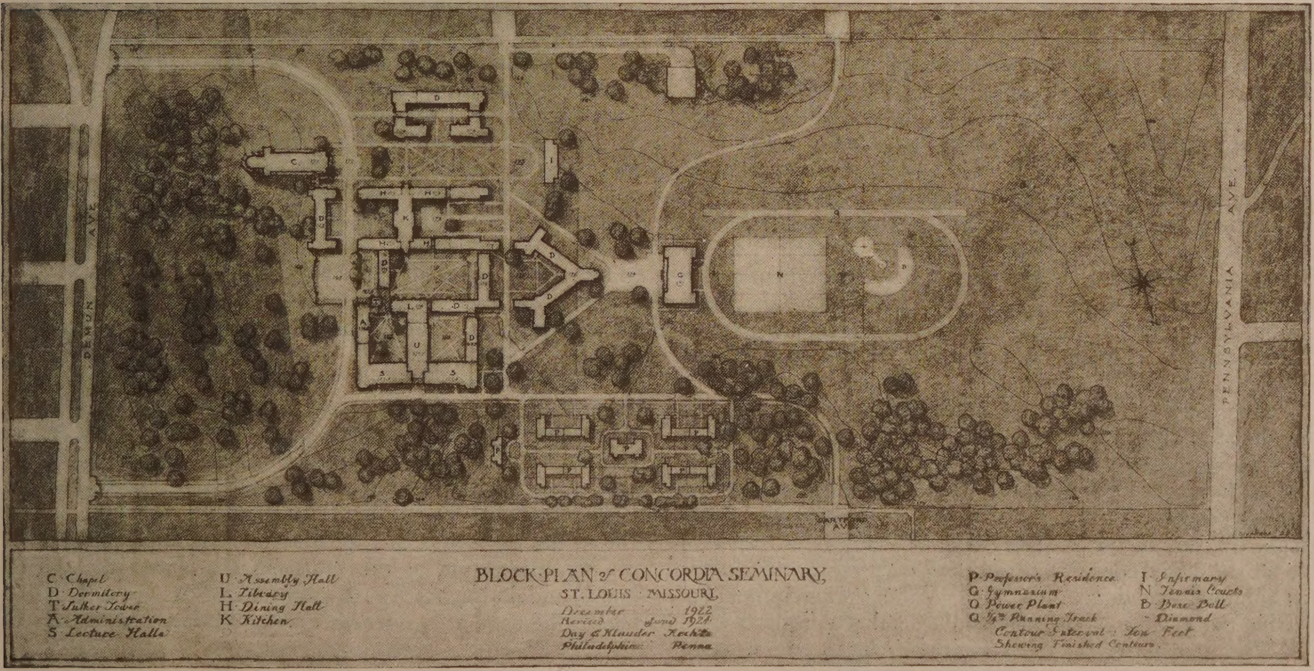
The site selected and purchased by the seminary authorities met with the enthusiastic approval of the architects. It is located in a choice residential district adjacent to Forest Park, St. Louis, Mo. The tract is beautifully wooded, and

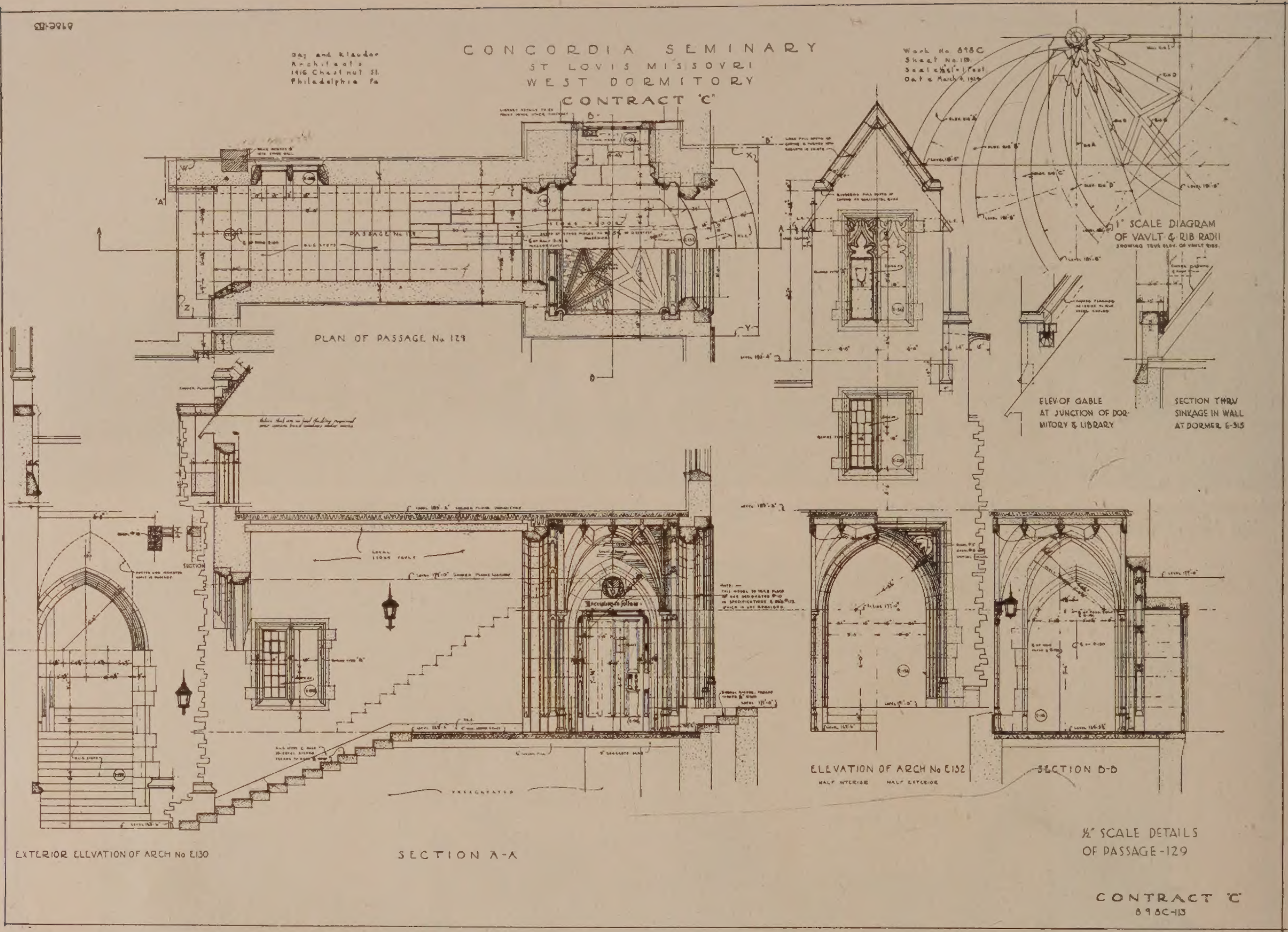

Concordia Seminary St Louis Mo East Elevation of Group
Day and Klauder Architects Phila

East Dormitory omitted, showing Dining-hall gables, Service Building, Graduate Dormitory, Walther Entrance, and Administration Building.


Concordia Seminary St Louis Mo Court C Looking North
Day and Klauder Architects Phila

Section through long court looking north, showing Dormitories, Library, south gable of Administration Building.




Day and Klauder
Architects
1416 Chestnut St.
Philadelphia Pa
CONCORDIA SEMINARY
ST LOUIS MISSOURI
WEST DORMITORY
CONTRACT 'C'
Work No. 898C
Sheet No. 13
Scale ½"=1 Foot
Date March 4, 1924
PLAN OF PASSAGE No 129
1" SCALE DIAGRAM OF VAULT & RIB RADII
ELEV OF GABLE AT JUNCTION OF DORMITORY & LIBRARY
SECTION THRU SINKAGE IN WALL AT DORMER E-315
EXTERIOR ELEVATION OF ARCH No E130
SECTION A-A
ELEVATION OF ARCH No E132
HALF INTERIOR HALF EXTERIOR
SECTION B-B
½" SCALE DETAILS OF PASSAGE-129
CONTRACT 'C'
898C-113

at its eastern end are a number of ravines which add greatly to the charm and attractiveness of the site.

After careful study and consideration by the architects and the seminary authorities, it was determined that the buildings should be placed on the eastern end of the property, the eastern façade of the group being kept far enough back from the traffic of DeMun Avenue, so that the noises resultant therefrom would not prove a disturbing factor. At the same time this offered a beautiful natural setting as a foreground, and added materially to the charm and interest of the approach to the group.

There never was any doubt as to the architectural style to be adopted. The committee appointed for the purpose of visiting and inspecting collegiate groups of buildings throughout the country were as one (after their visit to Princeton University) in determining that the style of architecture used at Princeton should be followed in the Concordia group; *i. e.*, English Collegiate Gothic, adapted to the needs of the present day, as it is so well exemplified at Princeton.

One can say here, with the greatest of pleasure, that it is a hopeful sign for the future of architecture in America that a body of men can be found who can whole-heartedly, and with determined zeal and unfailing interest, fulfil the trust imposed on them. This has been very notably manifested by the trustees and the several committees responsible for the initial conception and the gathering together of all the innumerable details involved in the work required for getting the project of the Concordia Seminary under way.

The plan finally adopted for the group is one of great interest and, as every architect will observe, could only be arrived at after intense study. The plan is irregular and yet not too loose; it is not formal and yet does not lack formality. There is a distinct main axis line through the long centre court running east and west, flanked by four smaller courts or quadrangles, two to the north of the centre court and two to the south. West of the centre court on the main axis line is a triangular residential hall, and west of that the gymnasium, which marks the western end of the group. Still further west we find the running-track and playing-fields.

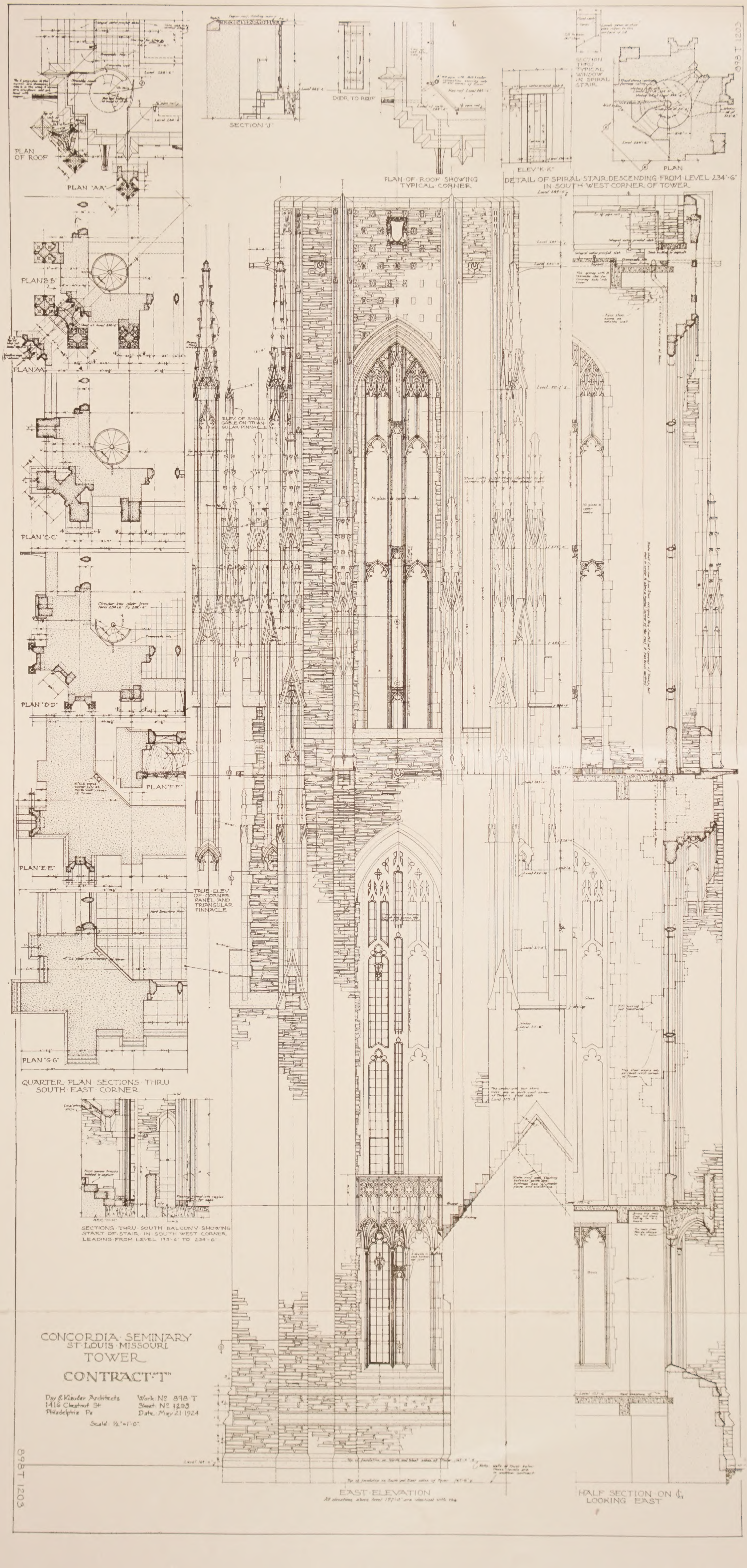
South of the main group of buildings, and parallel to the main axis, is a broad mall at the eastern extremity of which it is proposed to place the chapel. The site for this building —the soul of the seminary group—is, as it should be, commanding, and the chapel when built will dominate the entire group. It is physically joined to the main group, as in spirit it will control and guide the souls of the men who will within the buildings here planned be taught how best to utilize their talents in God's service.

At the western end of the mall has been placed the infirmary; thus we find these two buildings facing each other, so fittingly—the one for the care and development of the soul and the other for the care and well-being of the body.

South of the mall is placed a large residential hall, which, with the triangular hall before referred to, will take care of the future expansion of the halls for residential purposes.

In the ravine to the southwest is placed the powerhouse, and on the northwest will be found the group of buildings to be used as residences by the seminary professors.

(*Continued on page* 303)


898 T 1203
PLAN OF ROOF
PLAN 'AA'
SECTION 'J'
DOOR TO ROOF
PLAN OF ROOF SHOWING TYPICAL CORNER
ELEV 'K-K'
SECTION THRU TYPICAL WINDOW IN SPIRAL STAIR
PLAN
DETAIL OF SPIRAL STAIR DESCENDING FROM LEVEL 234'-6" IN SOUTH WEST CORNER OF TOWER
PLAN 'B-B'
PLAN 'AA'
ELEV. OF SMALL GABLE ON TRIANGULAR PINNACLE
PLAN 'C-C'
PLAN 'D-D'
PLAN 'F-F'
PLAN 'E-E'
TRUE ELEV. OF CORNER PANEL AND TRIANGULAR PINNACLE
PLAN 'G-G'
QUARTER PLAN SECTIONS THRU SOUTH EAST CORNER
SEC 'H-H'
SECTIONS THRU SOUTH BALCONY SHOWING START OF STAIR IN SOUTH WEST CORNER LEADING FROM LEVEL 193'-6" TO 234'-6"
EAST ELEVATION
All elevations above level 197'-0" are identical with the
HALF SECTION ON ℄ LOOKING EAST
898T 1203

CONCORDIA · SEMINARY
ST · LOUIS · MISSOURI
TOWER

CONTRACT "T"

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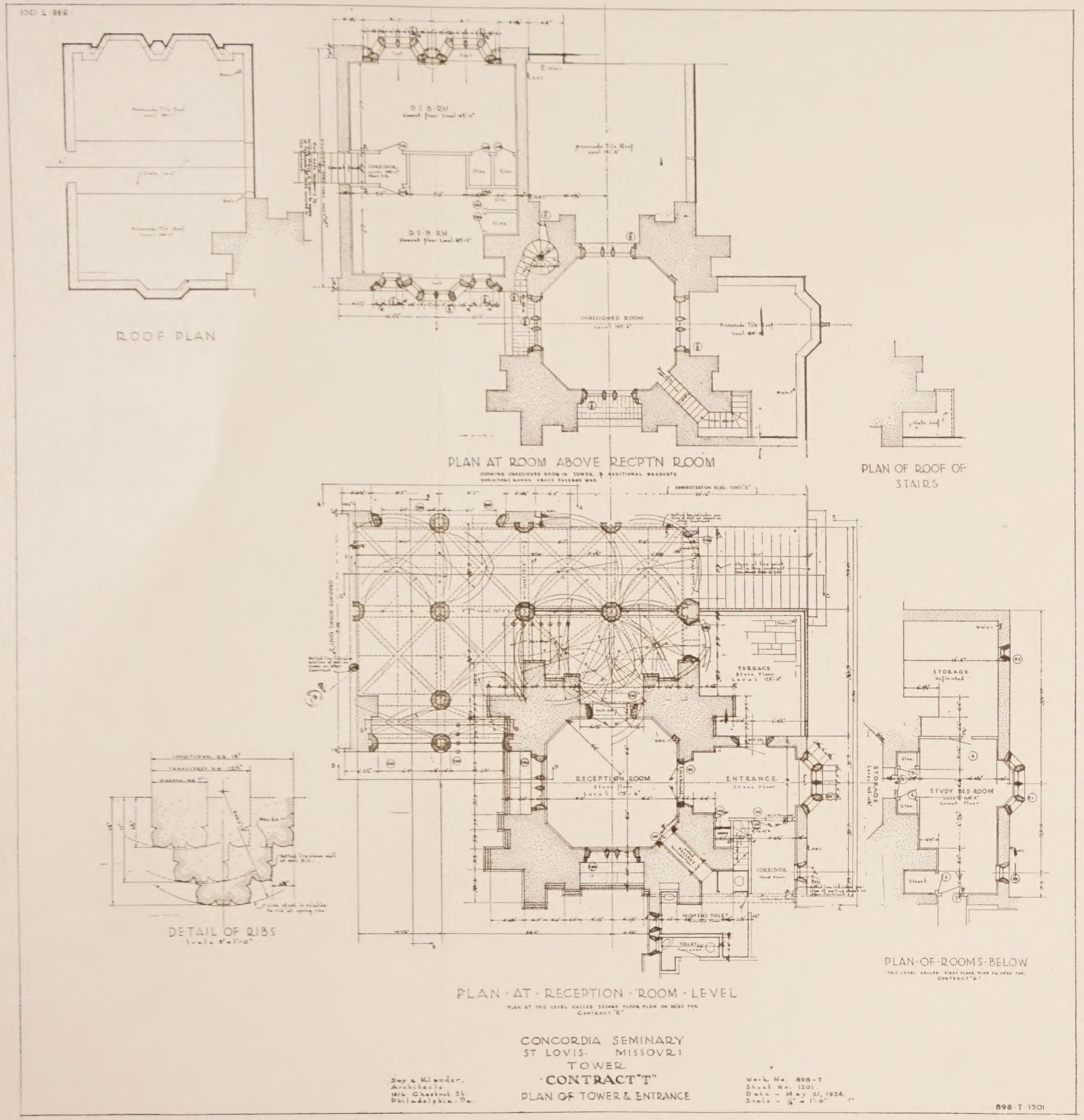
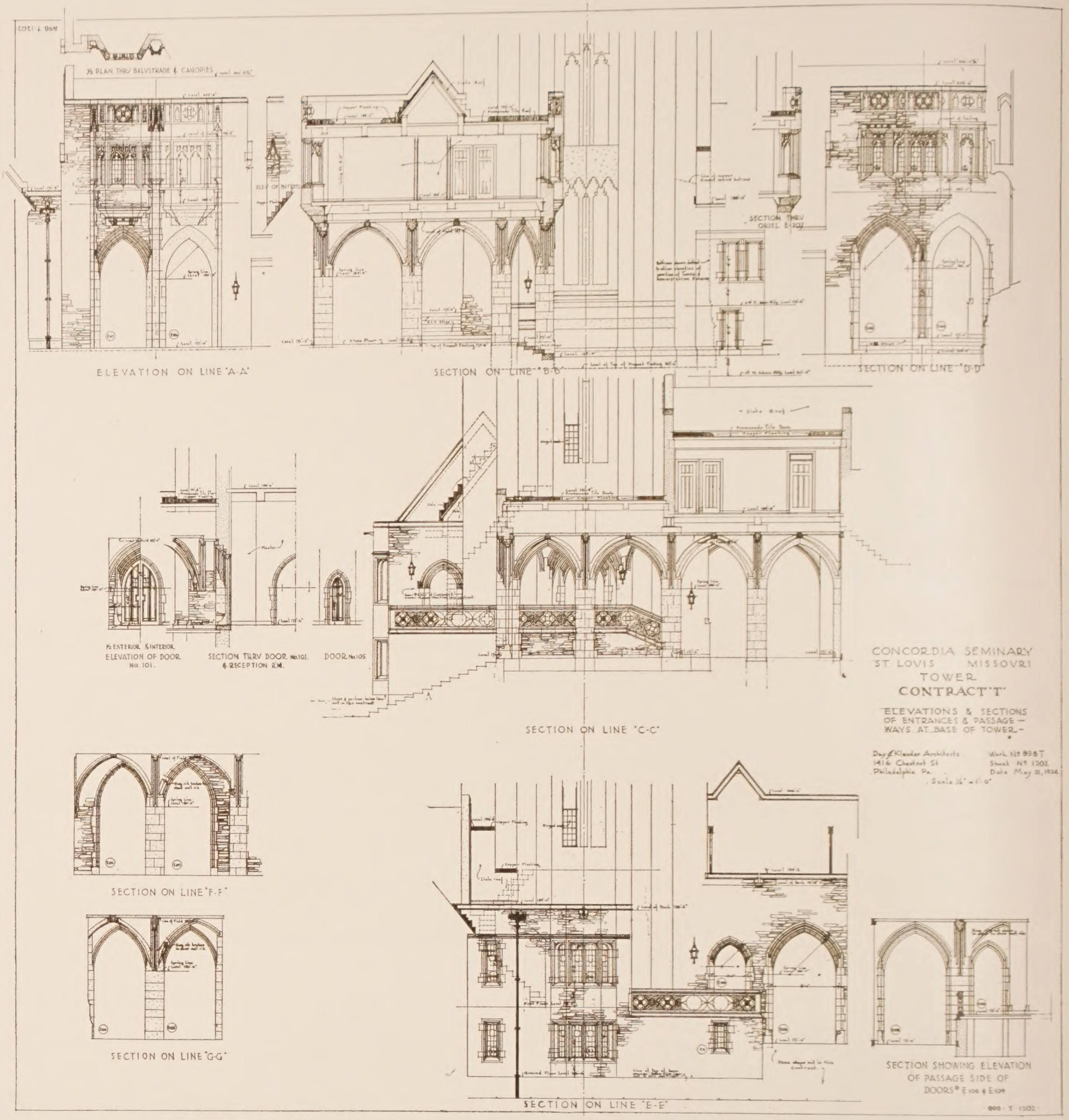
1416 Chestnut St
Philadelphia Pa

Work Nº 898 T
Sheet Nº 1203
Date May 21 1924

Scale ½" = 1'-0"




½ PLAN THRU BALUSTRADE & CANOPIES
ELEVATION ON LINE 'A-A'
SECTION ON LINE 'B-B'
SECTION THRU ORIEL
SECTION ON LINE 'D-D'
½ EXTERIOR & INTERIOR ELEVATION OF DOOR No. 101.
SECTION THRU DOOR No. 101 & RECEPTION RM.
DOOR No. 105
SECTION ON LINE 'C-C'
CONCORDIA SEMINARY
ST LOVIS MISSOVRI
TOWER
CONTRACT "T"
ELEVATIONS & SECTIONS OF ENTRANCES & PASSAGE-WAYS AT BASE OF TOWER
Day & Klauder Architects 1416 Chestnut St Philadelphia Pa.
Work No 898 T
Sheet No 1202
Date May 21, 1924
Scale ¼" = 1'-0"
SECTION ON LINE 'F-F'
SECTION ON LINE 'GG'
SECTION ON LINE 'E-E'
SECTION SHOWING ELEVATION OF PASSAGE SIDE OF DOORS

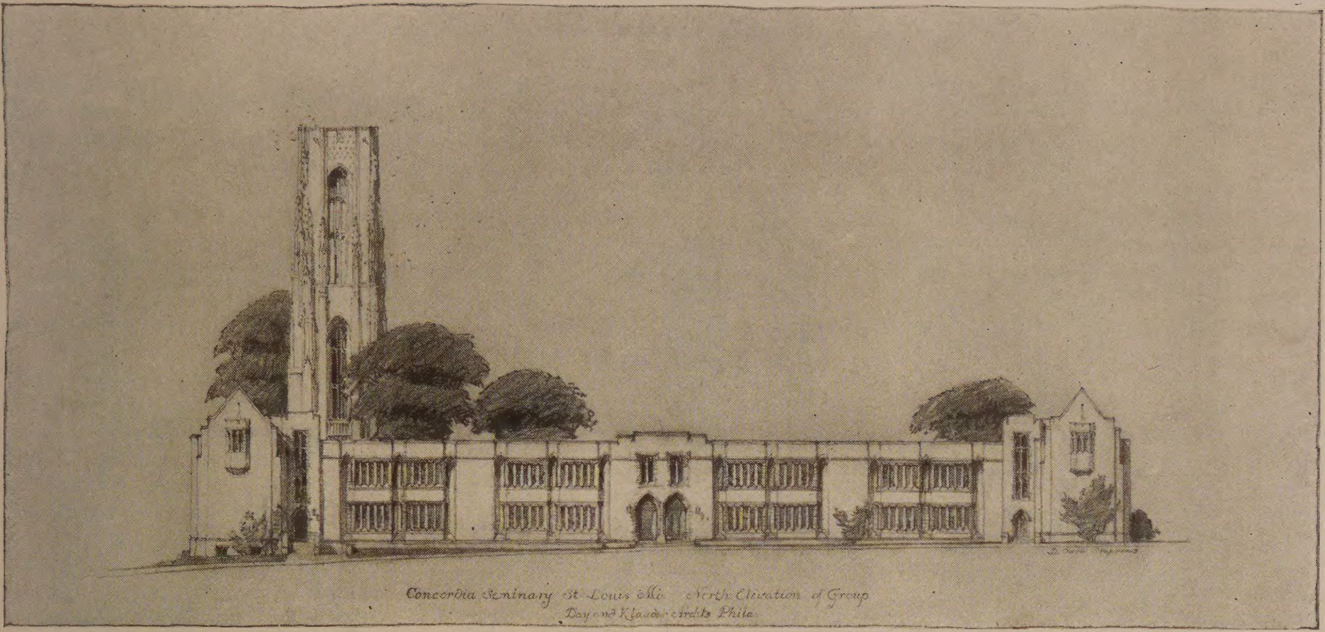
THE TOWER—THE ARCHITECT'S CONCEPTION

In the design of the tower an effort was made to achieve a design of which, but for its general proportions of width to height, no prototype could be found. It goes without saying that an endeavor was made to achieve something of extraordinary distinction. In its design, first of all freshness was sought, virility, spontaneity, in other words the element of masculinity, of force and character. To that end no features were carried above the parapet, and to add to this impression only one opening was used in the width of any elevation of the tower.

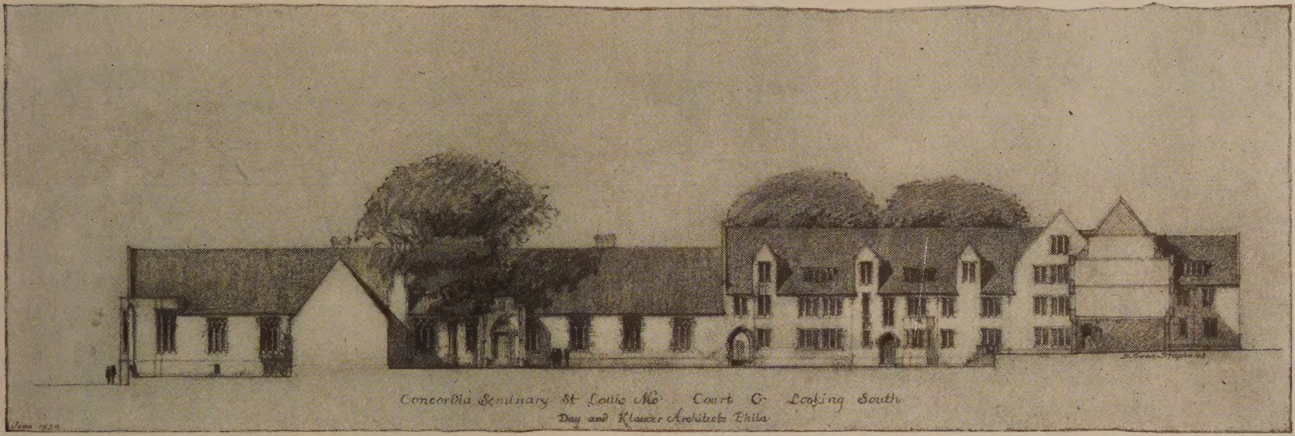
In designing, it is sometimes well to reverse the orthodox way of conceiving of an elevation and to consider it from the point of view of the corner pier as it appears between the openings on each side and to decorate that corner pier, which means to design the one corner instead of making it diagonal, keeping in mind all the time that the decoration of this corner should lead to a very subtle profile when seen at the other angle.

In the present case, that corner was decorated with what we conceived to be an ingenious arrangement of pinnacles and buttresses.

The tower is in two stages in its height—the lower being regarded as of double walls, the inner of which forms the exterior wall of the upper stage. Contrasted with its width, the lower window-openings are very high and, as the designer hoped, are impressive on that account. To surmount such a feature by a like feature of great height seemed to him to promise a certain dignity and mass quite beyond any impression due to the actual low height of the tower. To that end, also, the buildings adjacent to the tower were kept low, so that by contrast the tower might seem high. It must be remembered that if the tower could not be built for a certain limited cost, it could not be built at all. For the architect to strive by every means possible to make a feature of this sort more impressive than could be expected for the money at his disposal has given special zest and inspiration to his efforts.


Concordia Seminary St Louis Mo North Elevation of Group
Day and Klauder Archts Phila

North elevation of Lecture-halls.


Concordia Seminary St Louis Mo Court C Looking South
Day and Klauder Architects Phila

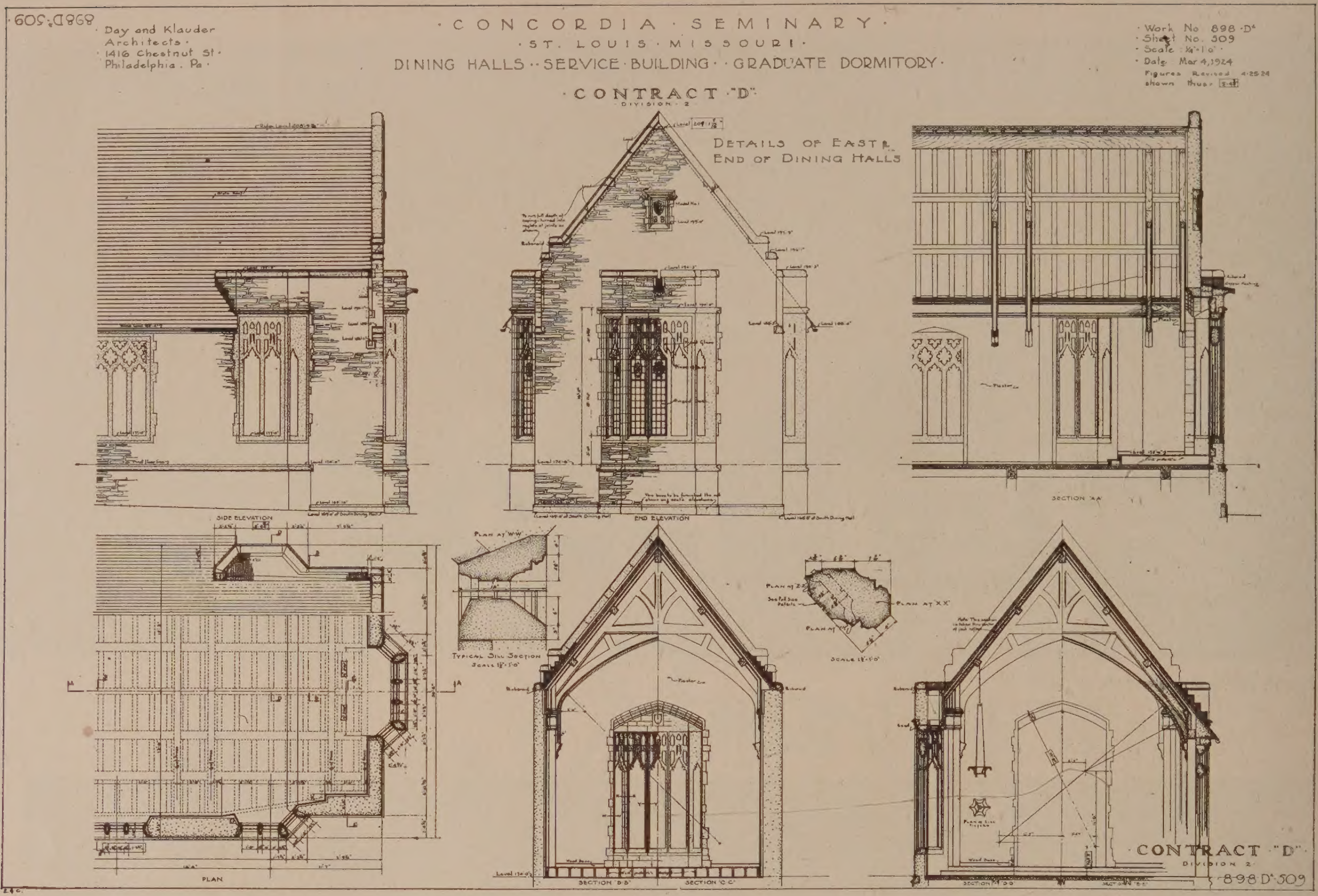
Section through long Court looking south, showing north Dining-halls and Dormitories.

(*Continued from page* 298)

The Luther Tower, which, until the chapel is built, will dominate the group, has been placed at the northeast corner of the main court or quadrangle, and in conjunction with the principal entrance, which will be known as the Walther Entrance.

The tower, named in honor of Martin Luther, the founder of the Lutheran Church, and to the teaching of whose principles the seminary is devoted, is a graceful structure, unique in its conception and, as far as the architect knows, it has no prototype. It has strength, yet elegance and grace prevail, and in its composition and mass we find a design so well balanced in its many component parts that the whole results in a harmonious blending of mass, void and detail. No one can fail to be impressed with the distinction and charm that it radiates.

The architects have felt that the buildings should express themselves forever as being "The outward and visible sign of the inward and spiritual grace," of the beauty and truth of the teachings of the Lutheran Church; that these buildings should be so designed that those taught therein should carry the gospel of beauty in architecture to the fields of endeavor to which they may be appointed to carry on the work of God's service; that their association in youth with buildings designed and erected in beauty and truth will enable them in their future fields of effort themselves to build with faith and trust, so that the gospel of architectural beauty devoted to God's service may not die in the land, but that it will become a living truth, forever enduring.


898D.509
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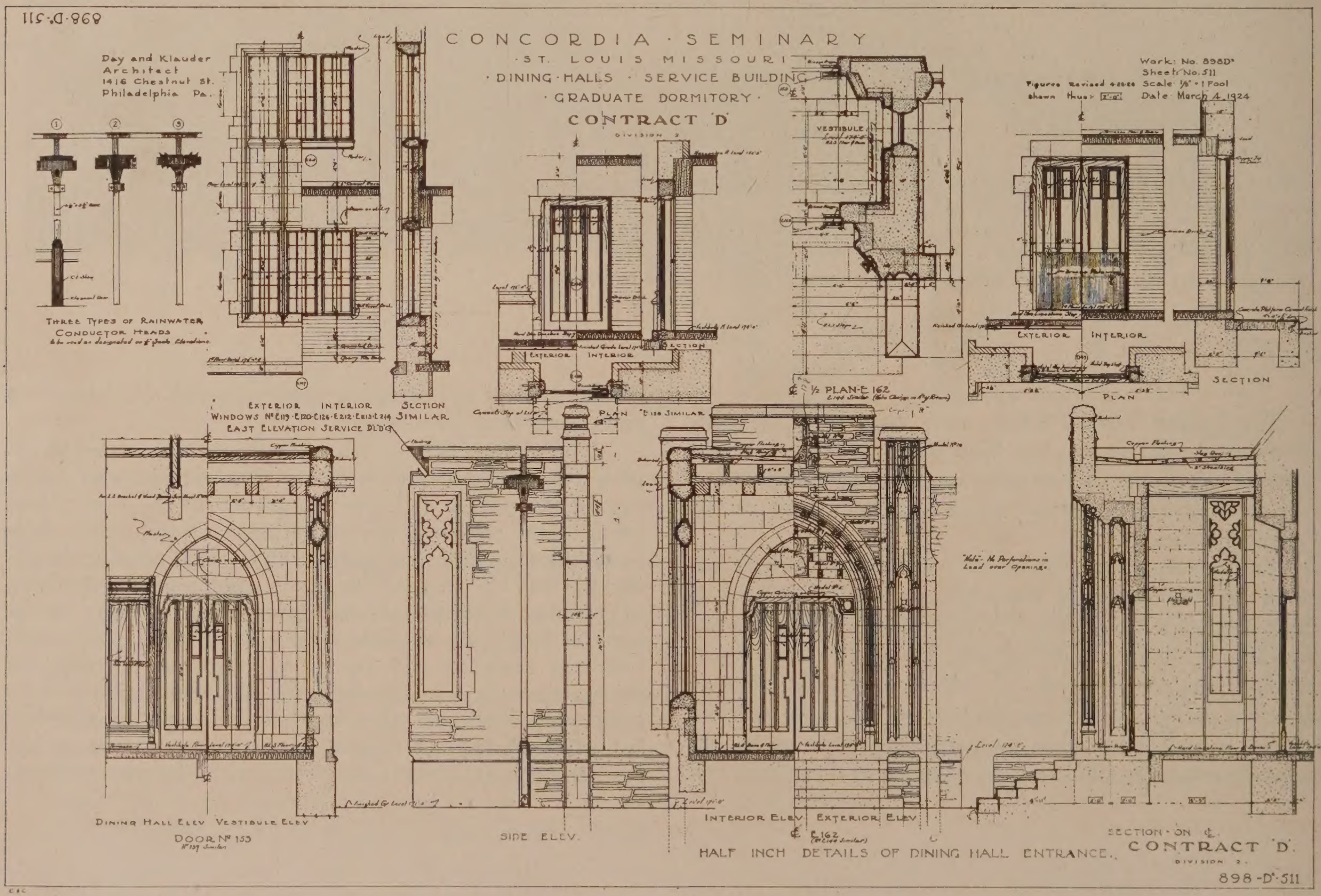
Architects
1416 Chestnut St
Philadelphia . Pa
CONCORDIA · SEMINARY
ST. LOUIS · MISSOURI
DINING HALLS · SERVICE BUILDING · GRADUATE DORMITORY
CONTRACT "D"
DIVISION 2
Work No 898 D
Sheet No. 509
Scale ¼"-1'0"
Date Mar 4,1924
Figures Revised 4·25·24 shown thus
DETAILS OF EAST END OF DINING HALLS
SIDE ELEVATION
END ELEVATION
SECTION AA
PLAN AT W-W
TYPICAL SILL SECTION
PLAN AT X-X
PLAN
SECTION B-B
SECTION C-C
SECTION D-D
CONTRACT "D"
DIVISION 2
898 D 509


898-D-511
Day and Klauder
Architect
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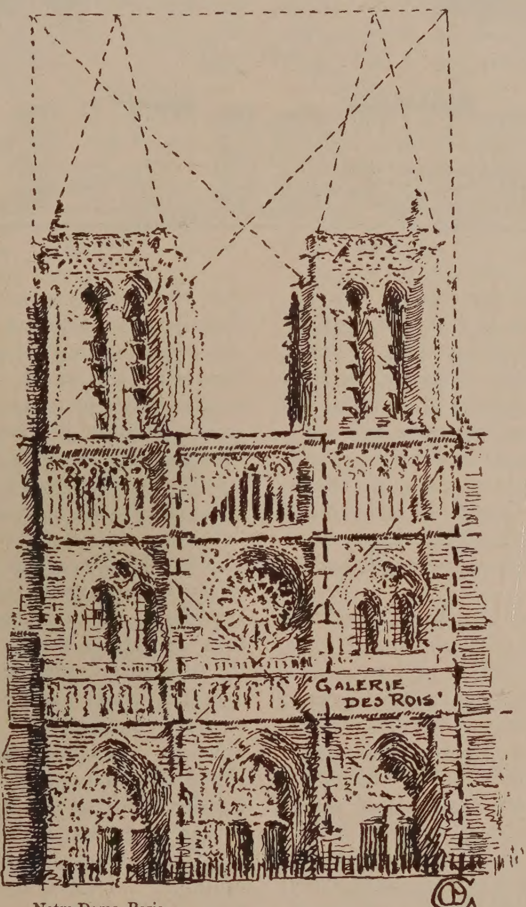
Philadelphia Pa.
CONCORDIA · SEMINARY
ST. LOUIS MISSOURI
DINING · HALLS · SERVICE BUILDING
GRADUATE DORMITORY
CONTRACT D
DIVISION 2
Work: No. 898D
Sheet No. 511
Scale 1/2" = 1 Foot
Date March 4, 1924
Figures Revised shown thus
①
②
③
THREE TYPES OF RAINWATER CONDUCTOR HEADS
to be used as designated on ⅛" Scale Elevations.
EXTERIOR
INTERIOR
SECTION
WINDOWS Nº E119 · E120 · E126 · E212 · E213 · E214 SIMILAR
EAST ELEVATION SERVICE BLD'G
PLAN
"E150 SIMILAR
VESTIBULE
½ PLAN · E 162
E144 Similar
EXTERIOR
INTERIOR
SECTION
PLAN
DINING HALL ELEV
VESTIBULE ELEV
DOOR Nº 153
Nº 157 Similar
SIDE ELEV.
INTERIOR ELEV
EXTERIOR ELEV
E162
HALF INCH DETAILS OF DINING HALL ENTRANCE.
SECTION · ON ℄
CONTRACT D
DIVISION 2
898-D-511

Some Principles of Architectural Composition

By Murray P. Corse

LABORIOUSLY, painfully almost, the student of architecture acquires certain principles of composition. That much difficulty might be eliminated and his education thereby hastened is obvious. This, however, involves no "royal road to learning." Some authoritative statement of main principles, while assisting the beginner, might moreover relieve the practising architect of uncertainties. Yet this very uncertainty is, perhaps, the chief obstacle. Those who should speak authoritatively hesitate, fearing to be accused of dogmatism.

That Guadet, with all his knowledge and practical good sense, touched so lightly in his "Éléments et Théorie" on the abstract seems a great pity. While much that he said about *pratique* (of hospitals or prisons, for instance) is now rather an antiquarian curiosity, his scanty theoretical observations are still law to many a school. Unfortunately, Guadet wrote at a time when dogmatism was the curse of artistic education; and his efforts were directed rather to breaking it up. In his day this was doubtless indispensable, but the modern student, reading superficially, gets the unfortunate impression that principles are worthless.



Notre Dame, Paris.

Books on composition there are a-plenty. Many, unfortunately, are by psychologists, or approach the subject from too theoretical an angle. For these, as a rule, neither the busy architect nor the still busier student has time. It seems easier to bungle along somehow, gaining practical experience and learning from mistakes. Of course, in the last analysis this is the only way to learn; still, unnecessary mistakes can be avoided and the road at least straightened. Among the most helpful books on composition may be mentioned that by John V. Van Pelt, a well-known textbook; "Architectural Composition," by Nathaniel Courtland Curtis; "A Manual of Architectural Composition," J. T. Haneman; Belcher's "Essentials in Architecture" (published in London); and in French: Mayeux, "Composition Decorative."

Could it be accomplished by wishing, I would have a commission drawn from the most diverse professional elements, academic and practical; classicist and Gothic enthusiast, together with your ultra-modernist, who despises both; and a sculptor and a painter or two for balance. Their purpose, I conceive, would be to express unequivocally such principles at least on which all are agreed. They might further—like a supreme court giving decisions—add those on which the majority agree, joining with them the dissenting or minority opinion.

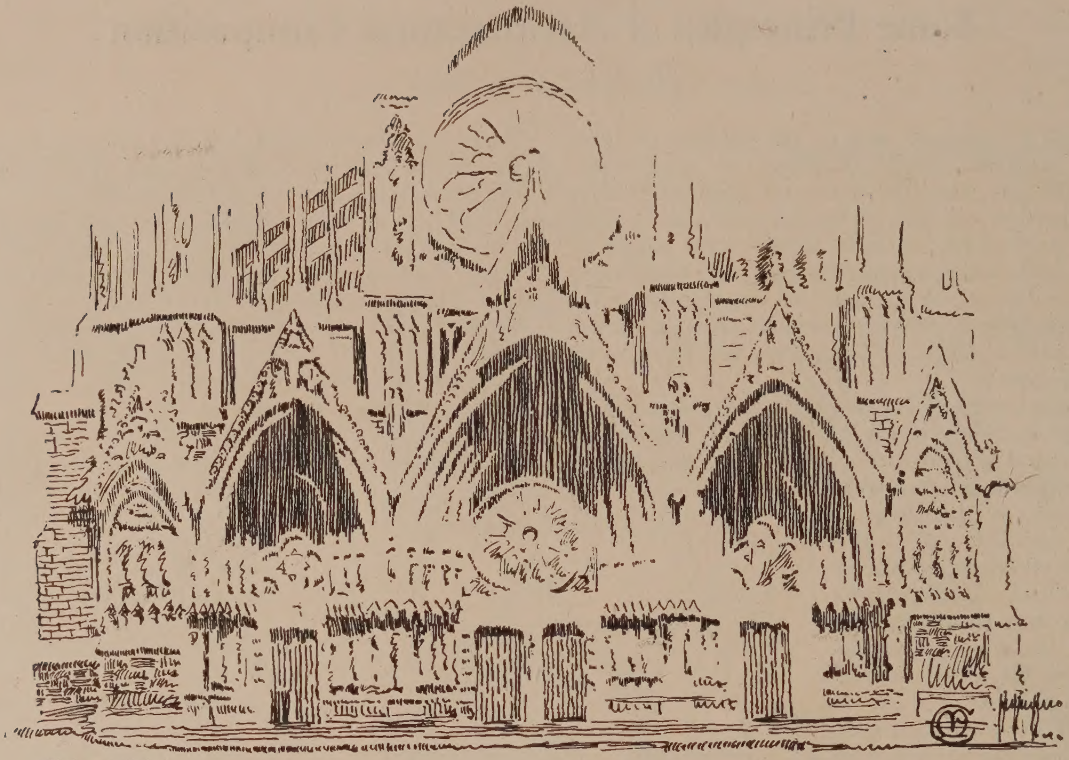
Lacking such a body, I offer, in all humility, these random suggestions. Whoever wishes to take exception to anything, expressed or implied, is earnestly requested to do so. But as the appearance of dogmatism is not easy to avoid, the reader's indulgence is hereby craved.

Purely pictorial principles we may ignore. Not always applicable to architecture, they often confuse the unwary. Indeed, the subtle difference between architectural and pictorial composition might justify a book to itself. Thus the great laws of *rhythm* and *harmony*, although of prime import, will not be approached. They easily assume too much importance in the eyes of the beginner, even to the obliteration of everything else.

Balance, however, is involved in the very structure of architecture itself. It is, perhaps, the battle-ground of more controversy than any other subject, except the sempiternal quarrel of the styles. And, indeed, the two quarrels are frequently confused. In the relative value of rigid symmetry and informal balance both the classic and the Gothic protagonists find a terrain which lies perilously near to the entrance to their citadels.

The principle of the "Dominant," or the "Dominante Intéressante," as the French expressively call it, is also rather formidable for a short essay; but as so much else depends on it, a few words are unavoidable. This principle, stated briefly, is to the effect that some one feature should frankly dominate the whole composition; or, in the negative form, "avoid equalities of proportion." No one, with the least artistic knowledge, would deny this; yet the principle, in my humble opinion, is often misinterpreted when it is made to insist that the dominant shall not only dominate in point of interest, but shall actually cover a larger area than any other feature. A jewel is not necessarily larger than its setting; in fact, it was one of the favorite tricks of the Renaissance to work up to a comparatively small picture, like an altar-piece, with an enormous amount of architectural frame. The human head, certainly the "dominante intéressante" in that case, is smaller than the trunk; the rose in the west front of Notre Dame of Paris has a smaller superficial area than the tower windows.

It is said that a very distinguished French professor would not tolerate in his school library the presence of a book illustrating Charles Garnier's "Opéra," on the ground that the plan is defective; the dominant, the auditorium, being swamped by its accessories. Now I wish to submit respectfully that there are two objections to this. First, practical considerations. If Garnier was forced by the exigencies of the case to devote more space to storage of scenery, studios, artists' dressing-rooms, foyers, vestibules, etc., than to the auditorium, which is limited in size by the limitations

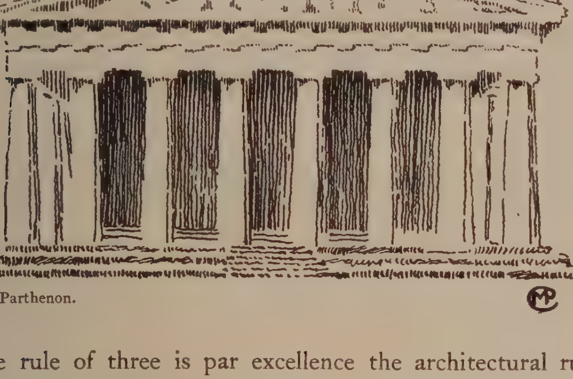


Rheims Cathedral.

of seeing and hearing, what alternative was there? Should he have housed some of the accessories in a separate building? Such a solution wouldn't stand an instant's scrutiny by either practical or theoretical canons. It seems, further, that if we insist on principles that cannot be enforced in actual life (for surely Garnier's problem was nothing exceptional) we will weaken the fabric of theoretical teaching and bring it into disrepute. But, in the second place, the whole objection appears ill founded, as Garnier's auditorium frankly and squarely dominates the composition by its central location, by the fact that everything opens into it and is otherwise subordinated to it.

I have dwelt somewhat at length on this question of the dominant, but it is rather of the minor principles that I wish to treat. The major ones are as a rule picked up by the student early in the game. He soon learns, if indeed he does not know instinctively, to avoid equalities of proportion; to make his central feature dominate in importance if not in size; to eschew the deadly "point of axis." And then suddenly he comes up against an apparent violation of some sacrosanct rule; and that in the choicest of classical architecture. Why do the Greek temples show an odd number of columns on their lateral façades? Why have certain structures, like the Pavillon de Flore in the Tuileries (river façade) and the end pavilions at the Château of Maisons-Laffitte no opening in the middle; how can certain Gothic fragments "get away" with a pair of twin gables, or what appears to be a perfect equality in proportions between dissimilar parts? It is not sufficient to say in answer that these are lateral façades, or minute details—the laws of composition are as inflexible for the leaf as for the whole tree—but they manifest themselves in a somewhat different form. Here we must stop and reason for an instant. The garden façade shows the peculiarity spoken of; on the river front, however, the end pavilion as a window on axis; it is interesting to compare these. The Luxembourg displays the same combination. I can offer no explanation for it, except that the architects were ~~not sure~~ of their ground. As the Renaissance advanced in France, this habit of subordinating wings by employing the "point of axis" was used with increasing adroitness, but was allowed to fall into neglect in the eighteenth century. In regard to the "point of axis" at the Pavillon de Flore—we should realize there is no *axis.* Similarly of the sides of a Greek temple. The Greeks were peculiarly sensitive to such fine points of architectural fitness; the French only one degree less so. They both avoided "creating an axis," as it is called, where an axis is not desirable. In the case of the temple, it may seem like carrying finesse to an unreasonable degree. No one, you may object, is going to stop and count seventeen columns to see whether they are odd or even. No; no one will stop to count them; but a sensitive mind will instinctively feel the difference, as a sensitive ear catches a wrong number of feet in poetry without counting. In lateral façades then, as in secondary motives, it is often desirable to do just what is forbidden at the centre of interest. Rules in this matter can be much amplified but they would become so involved as to confuse rather than to assist the student.

There seems, further, to be a certain architectural "rule of three." I have never seen this satisfactorily explained; never even referred to as far as I can remember, except in a brief statement that "three objects look well together." This of course relates back to our old friend, the dominant. Any object looks bigger and more important for being flanked on either side by a smaller object of like nature. The archbishop, supported by two acolytes, is far more imposing than when he is attended by only one. In architecture we have endless illustrations: base, shaft, and capital; footing, wall space, and cornice; the three members of the entablature. Finally, the human body gives, perhaps, the most perfect example in its triplicate division, both horizontally and vertically. This, to be sure, doesn't preclude a dual division, as the small church and its tower or the Doric column without a base; but duality strikes a distinctly minor note.



Parthenon.

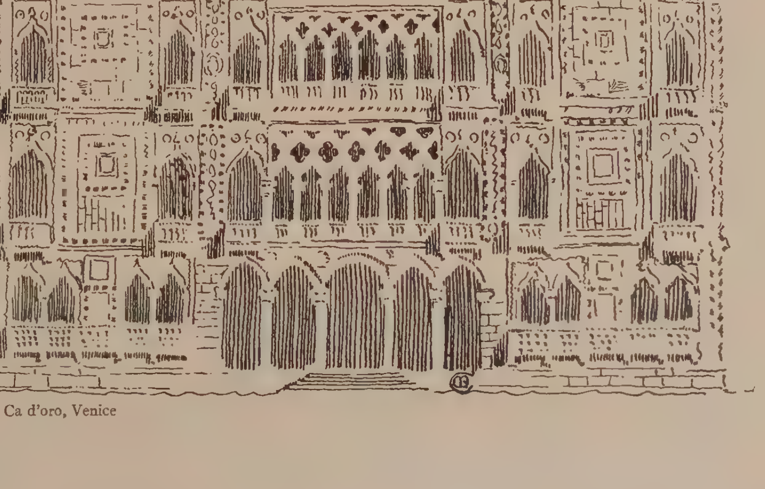
The rule of three is par excellence the architectural rule; while beyond three we may not go without either treating our objects as a series of indefinite extent, or else so accenting the central number that all others fall into two groups around it, thus bringing us back to the rule of three! Four, obviously, would be impossible to handle in any main architectural composition. (I am now speaking of motives that stand by themselves, not such as form merely one in a series, like columns or windows. The distinction, it is true, may be more easily understood than expressed. To make matters worse the members of a group of three are often felt to have individuality, whereas if a fourth be added they immediately lose it and fall under the category of an indefinite series.)

I think that almost any one will agree with me that five units which retain their separate characters are distinctly bad. A strikingly awkward example of this fault, to my mind, may be found in the west façade of Rheims, where there are five gables of graded heights on the ground story. I was struck by this error when a mere child, and subsequent experience has simply served to intensify my feeling. To be sure, there are so many merits to the façade (not to mention our sentimental attachment) that, as Professor Moore justly says, it is difficult to view it in a calmly critical light. Nevertheless the fault exists, proving that even the greatest masterpieces of human genius are often not free from gross errors. It is useless to object that the end gables cover niches, not doorways; the fact merely serves to accentuate their individuality. Had the gables over the three doors been equal in size it might perhaps have saved the composition, which would then have resolved itself into a triple group, *i. e.*, of three central gables forming a single motive, flanked by the two smaller ones. Unfortunately they are all graded in size, from the largest one, in the middle, down to the smaller end gables. A similar error is to be found at Saint Mark's in Venice. It may be objected that Notre Dame of Paris shows such a quintuple division vertically in: ground story, "Galerie des Rois," rose window, great gallery, and tower; but a little thought will convince one that the "Galerie des Rois" merely serves as an ornamental band separating two stories, not as an element in itself; while the towers lie outside of the composition, strictly speaking. It might be well to note here that both Rheims and Paris were intended to have spires, which would have appreciably altered the composition of their façades—a fact that we shall have occasion to touch on later.

Nearly all monumental and distinguished buildings of the past show this triple division, as does the best work of the present time. We may perhaps consider unusually long façades, like the Capitol at Washington or the Palais des Beaux-Arts, Paris, as showing five motives; but I feel strongly that these fall into the former category, for the connecting links are not thought of as separate motives, but merely connecting links. Where they reach the "dignity" of separate motives, as in certain Teutonic houses of parliament or the Law Courts in Brussels, the effect is distinctly bad.

This triple division, I have implied, in most cases is to be found both vertically and horizontally, producing a "rule of nine" so to speak. How can this be made to cover a Greek temple on the one hand or an acknowledged masterpiece of modern times, like the Bibliothèque Sainte Geneviève, on the other? Well, in regard to the Parthenon the vertical division is obvious: stylobate, mass of building, pediment. Horizontally the question is rather more subtle, quite in keeping with the Greek character. The central intercolumnations, to one standing directly in front of the main façade, are bound together as it were by the solid mass of the cella walls back of them, while the two end ones are slightly detached by the light which shows through. The diagonal view shows a similar effect. We must remember that to produce a satisfactory effect on the mind it is not necessary to show everything to the eye; it need only be suggested and our imagination, or at least an artist's imagination, will do the rest. An armless statue is still grasped as a group of three—we know that the arms were there, or were intended. In regard to the Bibliothèque Sainte Geneviève it is more difficult to find an explanation. Perhaps the architect considered it secondary to the Panthéon and, with that excellent good sense and almost divine humility which characterize French artists, was willing to subordinate his work. Even so, it has always seemed to many critics to terminate rather abruptly, as if a higher breasting, or an attic story, were needed. The architects of the Boston Public Library, who adopted a somewhat similar *partie*, though in a very different location, decided to show a broad expanse of roof.

Perhaps the most interesting form of architectural composition, however, lies in combining the rules of two and three; the latter always being made to dominate. There are many beautiful examples of this; two in particular I wish to single out for illustration. The first is that little jewel in Venice, the Ca d'oro; the second, that superb stretch of official architecture, variously known as the Place de la Con-



Ca d'oro, Venice

corde, the Ministère de la Marine, or the Garde-Meuble, in Paris (a portion of which is now occupied by the Hotel Crillon). These two are surely the antipodes apart; the one a passionate bit from the south, warm with colored marbles, light and airy with foamlike cresting, Gothic in style with a liberal mingling of the Oriental; the other, severely classic, formal, restrained in ornament, only saved from frigidity by its extraordinarily happy proportions and excellent grouping; but they serve in a curious way to illustrate the same principle. The Ca d'oro is an unfinished composition, dissymmetrical as it stands; it was intended to have another wing to balance the existing one. Such an addition might have added something of monumental dignity; it certainly would have detracted from the picturesqueness. However, the building does not seem incomplete. Perhaps the artistic imagination, referred to above, supplies to the mind's eye those parts intended by the architect but not executed. Let us act on this assumption and proceed to analyze its composition as if it were a completed façade. Thus we should see triple divisions both horizontally and vertically. But the Venetians were too astute to overwork this rule of three; for, having once laid out their whole composition according to it, they refrained from introducing it in the minor details. The arches are *indefinite* in number; that is, the number cannot be grasped in a glance; it is necessary to count them. The central arch on the ground story, to be sure, is slightly larger than the others. This was necessary to "accuse" the entrance; but as it was not desired to emphasize the vertical axis, which would tend to conflict with the horizontal feeling *in the central motive*, this is not repeated in the upper arcades. The upper arcades even show a column on the axis, and right in the centre of the building, too! This might meet with emphatic condemnation from academic sources, but it is singularly effective. The wings show a division of two, with a "point" or mass of masonry—in this case a panel—in the centre. This not only increases the contrast between the body and the wings but, by keeping the latter free from any suspicion of an axis, serves to throw the attention back to the former. This playing off the "rule of three" against the "rule of two" is further involved in the great fundamental principle of rhythm, which we have agreed not to approach here.

Now let us revert to the Place de la Concorde, Paris. Here everything seems to be duality. There are two structures, each has two pediments, and is two stories in height. The four entrances, it is true, are triple compositions; but where else can we work in our rule of three without calling on the chimney-pots which deface its sky line?

When Gabriel faced the problem the Madeleine was not built. He had presumably a free hand; he might have piled up all his interest near the centre; even bridging the Rue Royale with a huge Triumphal Arch. Had he done so, he would certainly have produced a commonplace result. But with the foresight of genius he realized that the vista through the Rue Royale would eventually be closed by some sort of a monument, and in all probability one of a strongly classic type; he seized on the chance of a lifetime and produced the masterpiece that wrings from even enemies expressions of admiration and wonder.

The Madeleine supplies the central motive; whether we are in position to see it or not, its presence is felt. Horizontally the Madeleine is a triple mass; vertically it falls, with the long wings, into a triple group. These latter are carefully subordinated by their dual composition; their pediments are mere accents recalling the main pediment of the central *motif* and serving to harmonize the whole. The use of triple entrances is quite justified here; the rule of three has not been used excessively in the ensemble. We are conscious rather of its duality when near enough to appreciate the details.

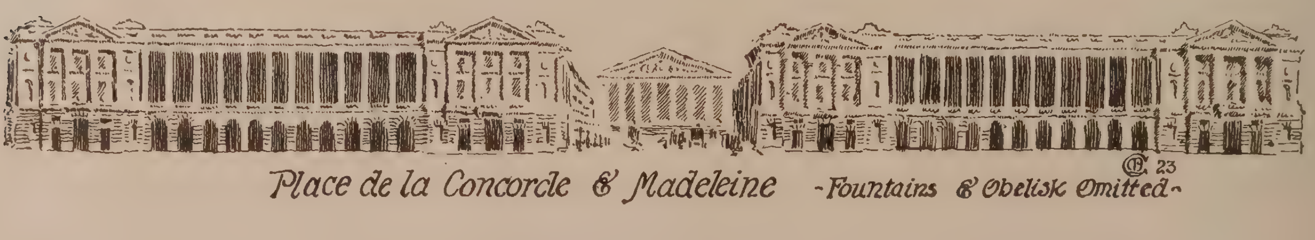
Moreover we must bear in mind that the Place de la Concorde is an unusually large composition; that it must present a successful appearance whether seen in part or as a whole; that either half might be taken down at any time, leaving the other half standing in solitude. It is easy to see that almost any other combination of elements would prove disastrous in such a case.

I know of no other work on anything like that scale which shows such a consummate grasp of all the possibilities involved.

Nor is the attitude of developing Gothic art toward this two-three ratio without interest. Gothic artists, never too proud to learn, made changes, when they saw the necessity, as they went along. Both Paris and Rheims, we noted before, were designed for spires. Why, then, were these abandoned? Lack of funds, it is commonly said. More probably a feeling that the façades were complete without them. Earlier spires there are, and many later ones; but it is noteworthy that the great epoch of cathedral building was chary in this respect. Appreciation of fine points in design and composition had reached its maximum, to fall off somewhat later. In any case, although the spires would have altered these façades to a marked extent, they would hardly have been an improvement.

Dotted lines in the sketch suggest the effect of such an addition. (According to one theory, the whole was originally composed within two squares, as indicated.) Cover these lines with a card, and you will at once see the difference. (Or it may be seen in the west façade of Cologne, although there are so many other faults there as to obscure the issue.) The original intention, reasonable though elementary, was to produce a double ratio of three, so to speak: mass of building, triple in both senses, as explained above; to which are added towers, also triple, *i. e.*, base engaged in mass of building, free standing shaft, and spire. By suppressing the latter, the three-two ratio, with very superior results, was gained.

Students, in composing their elevations, should certainly think more of principles than of historic styles. I once pointed out to a competitor for some important prize how his composition could be improved by omitting from his end pavilions pediments which claimed undue attention. His answer was to the effect that his design, Georgian, Louis XV, I forget what, demanded the pediments, irrespective of composition. Such blind fidelity to style is thoroughly misplaced, and to an extent justifies the attacks on systematic study of the past, sometimes called in derision "Archæology."



Place de la Concorde & Madeleine -Fountains & Obelisk Omitted-

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* Reg. U. S. Pat. Office

Editorial and Other Comment

"*Architectural Cannibalism*"

SUCH is the heading of a recent editorial in the New York *Herald-Tribune*. It expresses the feeling of thousands who have watched the building, and the destruction, of some of the city's architectural landmarks, some of its tributes to the idea of beauty, some of its monuments to the skill, taste, and knowledge of men who have done much to make our architectural history.

We of this town and those who travel this way look upon the tower of Madison Square Garden, with Diana atop ever flirting with the winds, looking at the dawn as it gilds her figure, at the sunset as it fades and leaves her to wait the flooding moonlight, with the thought of the genius of two men, artists who gave the tower and the figure to the world of beauty. Stanford White's name is writ large on the tower, and Diana, with all her loveliness and grace of poise, shows another side of the genius of Saint-Gaudens, whose Farragut just across the Square is one of the most dignified and splendidly characteristic statues in any land. All things pass with time, but in New York time is put ahead to meet commercial needs, and the thing of to-day that we thoughtlessly may look upon as permanent is to-morrow razed and forgotten. It will be a pity to see the Garden give place to a modern office building—a pity that such a beautiful building shall pass with all its memories. What a story of human vanities has been associated with its career, from the days of the dog- and horse-shows to that ever delightful renewer of youth, the circus, down to the era of the prize-fight ring and the recent Democratic convention!

Shades of John L. Sullivan and other heroes of the padded mitts are envisioned, and the lean and hungry faces of the six-day walkers and the knights of the long grinds awheel.

By day the tower has been a landmark for every rider atop a bus, and by night Diana has pointed the way to the stars, and to fair winds and foul.

The Garden will vanish, and the Square will continue to be a place for the discarding of hundreds of newspapers, for the flight of pigeons, the chatter of English sparrows, the place of temporary rest for poor human derelicts late at night.

We have been talking a lot about precedent of late, but we dare say that few indeed have ever begrudged the debt that Stanford White owed to Spain for his tower. It is such use of precedent that makes it worth while having precedent, anyway. Nature is forever repeating, forever reminding us, the world over, that beauty knows no land or boundary.

In the same editorial the writer makes a plea for the preservation of another creation of Stanford White's, the beautiful little Herald Building, that stands where the two great channels of business, Broadway and Sixth Avenue, go their separate ways.

What a pity again, and may not something be done about it? We suggest that the city buy it and dedicate it to the people. As a thing of lasting beauty only? No—as a public service station, with a swimming-pool and baths. Maybe some one with a big purse and a heart as big will make it a gift to the city, a monument to himself in thus giving a blessing to thousands.

The *Herald-Tribune* writer makes a recommendation concerning the preservation of the Tower of the Garden that we hope will be given serious thought, "move it to University Heights" and let it become a shining light of beauty there. Save it, and give lovely Diana standing-room elsewhere; or carry her with tinkling cymbals, with the blowing of pipes, with dancing girls, with garlands of flowers, and enshrine her, in some niche worthy of her beauty, in the Metropolitan Museum of Art.

In Beauty and Truth

WE have several times had occasion to comment on the attitude of the Lutheran Church toward the advancement of architecture. They are doing a great service in many ways and their church architecture is an honor to their organization and a light in the darkness for others to follow. In thinking of better architecture as a part of the manifestation of the spirit of worship and service we are all of us their debtors. It was this spirit of worship that made the wonderful Gothic cathedrals possible; they were built on foundations of faith and spiritual aspiration, and these will be a part of the beautiful buildings that Day & Klauder have designed for the great Concordia Seminary group at St. Louis.

The architects have paid tribute to the fine co-operation that has marked all the relations of those concerned from the beginning, to the seriousness with which the purposes of the buildings have been considered. And no wonder that the architects have so splendidly risen to the occasion. To them has been given the assurance of sympathetic and understanding co-operation and they have given of their best. Their expressed ideal was:

"That these buildings should be so designed that those taught therein should carry the gospel of beauty in architecture to the fields of endeavor to which they may be appointed to carry on the work of God's service; that their association in youth with buildings designed and erected in beauty and truth will enable them in their future fields of effort themselves to build with faith and trust, so that the gospel of architectural beauty devoted to God's service may not die in the land, but that it will become a living truth, forever enduring."

Winter Construction Should Not be Halted

"WHEN winter comes" construction men know that "spring is not far behind." Unfortunately through the years the idea became fixed that the winter season was disadvantageous to successful prosecution of construction projects. But winter construction has been done, can be done, and should be done.

In the early days of the country's development, when time was less essential than it is to-day and when our industrial situation was less complicated, it was seemingly justifiable to defer building until climatic conditions made matters a little easier. In our present rapid age, when our vast population consumes the limit of production in many lines, construction cannot afford to doze in the atmosphere of mid-Victorian non-aggressiveness.

If winter is to bring a lull in meeting the demand for construction, next spring will find the construction industry confronted with problems of shortage in materials and labor, transportation difficulties, and a rising market that will seriously interfere with its progress. If that occurs the public will be forced to incur costly delays in getting needed improvements and run the risk of higher if not prohibitive prices.

The advantages of uninterrupted construction throughout the year must be apparent to everyone. Whether used as an ameliorative on transportation problems, or as an aid to continuity of employment, or as a necessity in stabilizing production of materials, or as an effective contribution to the public demand for construction projects, every day added to construction is of incalculable value.

It is curious to note how tenaciously prospective investors in construction projects and builders cling to the obsession that winter work is impracticable. I have indicated how this practice arose in the earlier days, and I am sure that a brief consideration of the winter of 1917 will reveal that cessation of construction during the winter months is merely the result of a psychological hallucination. The most severe winter weather was encountered in 1917—blizzards, extreme cold, and high winds. But the nation was at war. All along the Atlantic seaboard, docks, piers, foundries, factories, and warehouses were in course of construction. Did a blizzard bring delay? Not much. Tons and tons of steel were bolted up while the snowflakes sizzled on the red rivets. Yards of concrete were poured while the tampers' gloves froze to the shovels. But the work went on. The job was done. The possibility of a twelve-months construction year was revealed.

AMERICA'S TRIBUTE TO GREAT ENGLISH ARCHITECT

Tablet in memory of Sir Christopher Wren, placed in St. Paul's Cathedral, London (August 1, 1924), by the Architectural League of New York, in recognition of his influence on American Colonial architecture. The wreath, composed of oak leaves and golden rod, symbols of England and the United States, was designed by a New York architect.

Telling the Age of an Old House by Its Hardware

A WRITER in a recent number of *Old Time New England* says that the age of many old houses may be fairly well determined by the nails used, the style of hinges, the door panels, the wrought iron thumb latches, the Norfolk latches, the cast-iron thumb latches, the wood screws, and the sawed laths.

Hand-made or wrought nails of soft malleable iron, with rectangular shanks, drawn by hammer blows to a point and with clearly hammer-marked heads, were universally used in house building until about 1800, when cut nails, because of their cheapness, superseded them. Where the original nails of a house were wrought, the house probably dates before 1800; if they are cut, after that date. Nails used at the time the house was built are nearly always to be found in the garret floors.

The wrought nail is easily distinguished from the machine-made or cut nails. It was made from rectangular strips of malleable iron, several feet long and about a quarter of an inch thick, called nail rods, which were furnished the blacksmith.

The cut nails everywhere superseded the ancient wrought nail not long after 1797, when two cut-nail factories had been established in Philadelphia, and therefore, if used by the builder, they will date a house as having been built after that year.

In the Colonial period in America, house-door hinges were made always of wrought iron until 1776 to 1783, when cast-iron hinges suddenly and universally took their place. Door panels before 1776, if edged with moldings, always show a plain, unbeaded ovolo or quarter-round molding on their outer margin, while immediately following the Revolution, after 1783, these same ovolo moldings become scored with one or two quirks or beadings or changes into the ogee.

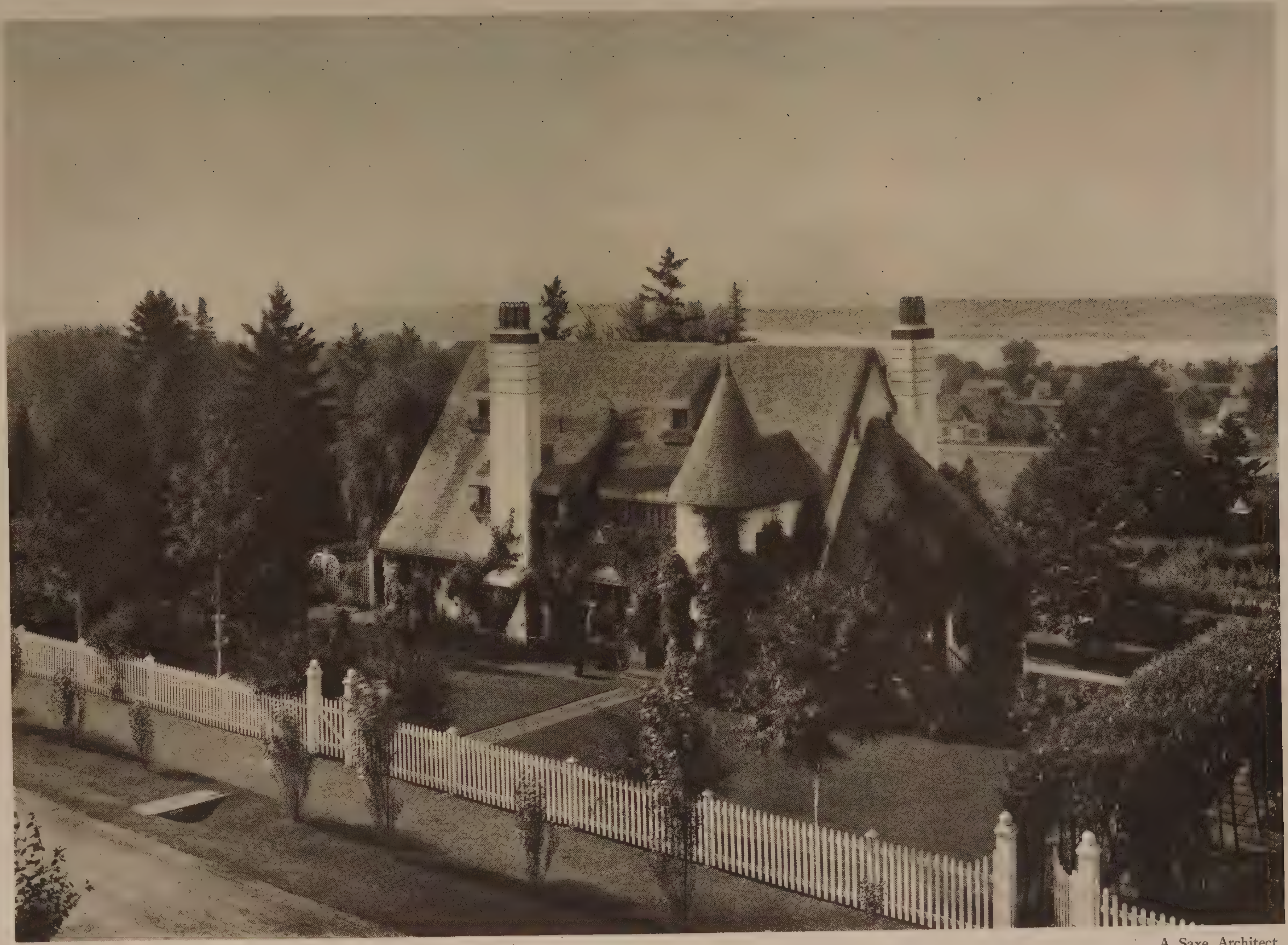
The Norfolk latch is easily distinguished from the wrought thumb-latches in having its hand-grasp not enlarged at each end into plates, or cusps, but riveted upon a long, narrow, sheet-iron escutcheon. We may conclude from the evidence that the Norfolk latch, if contemporaneous with the building, will date a house between 1800 and 1840, or, allowing for survivals, 1850.

Numerous dated examples found show that Blake's typical cast-iron thumb latch, with circular catch-plate mortised and screwed into the door lintel, hollow patent bar pivot, hollow staple guard, and saucer lift, with opposite down curve, first come into general use in 1840. This latch, when complete and original, as the evidence clearly shows, will date a house as built after 1840.

The unmistakable pointed wood-screw, now universally used, was patented by United States patent No. 4704, August 20, 1846, before which time all wood-screws in general use, unless pointed by hand filing, were blunt.

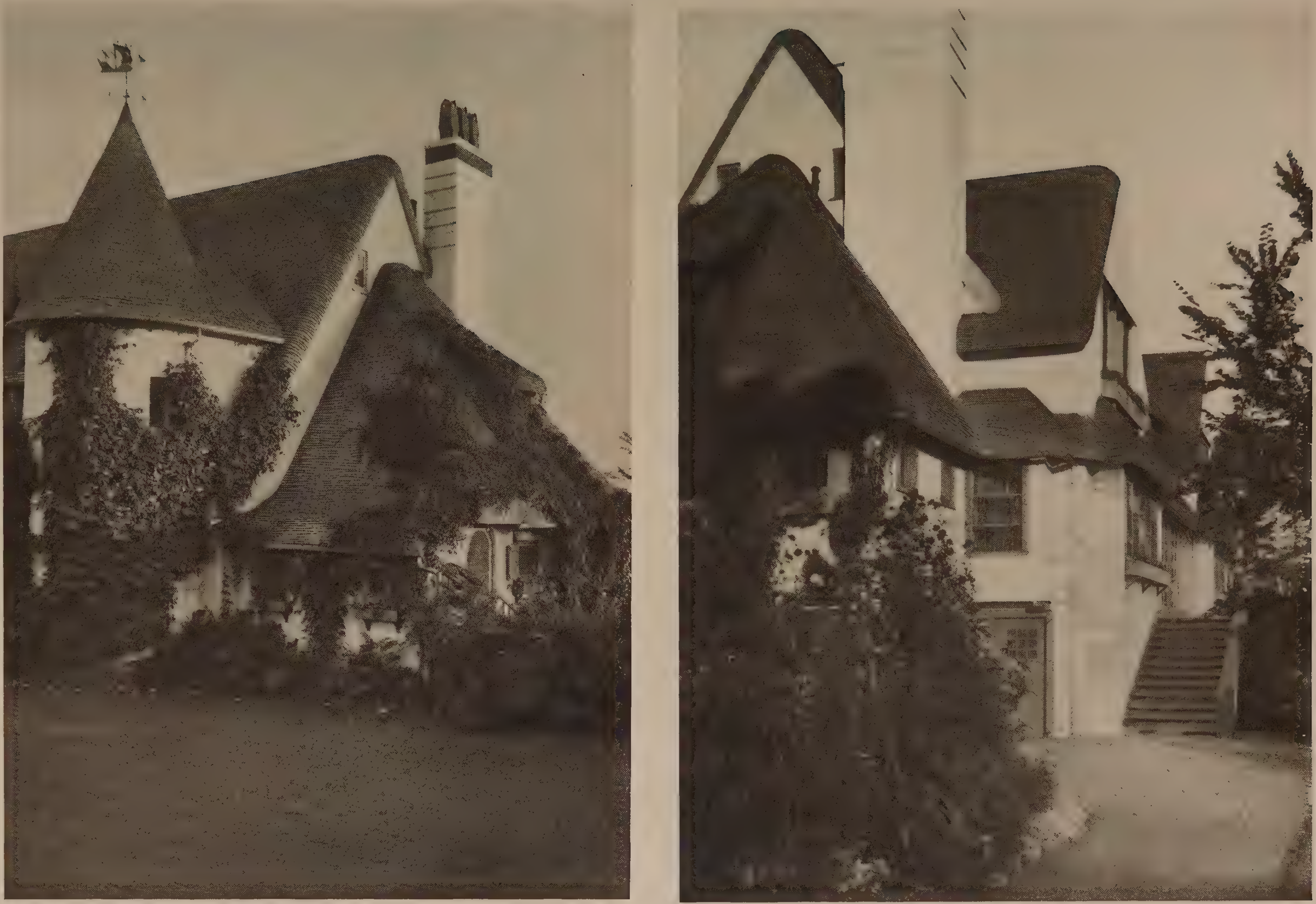
Because these pointless screws would not start by driving into the wood or penetrate, except by a previous gimlet hole, the pointed wood-screw suddenly and universally superseded them. Therefore, the wood-screw, if pinless and original, will date a house before 1846; if pointed, after that date.

These facts, marking the end of the old house building period, though only applicable to the very latest buildings, are, nevertheless, important, since they may help to direct wholesale restorations or additions and show when kitchen fireplace doors stopped open-fire cooking, or where old latches, hinges, or doors have been shifted out of time or place.



"PANSY PATCH," ST. ANDREW, N. B.

A. Saxe, Architect.



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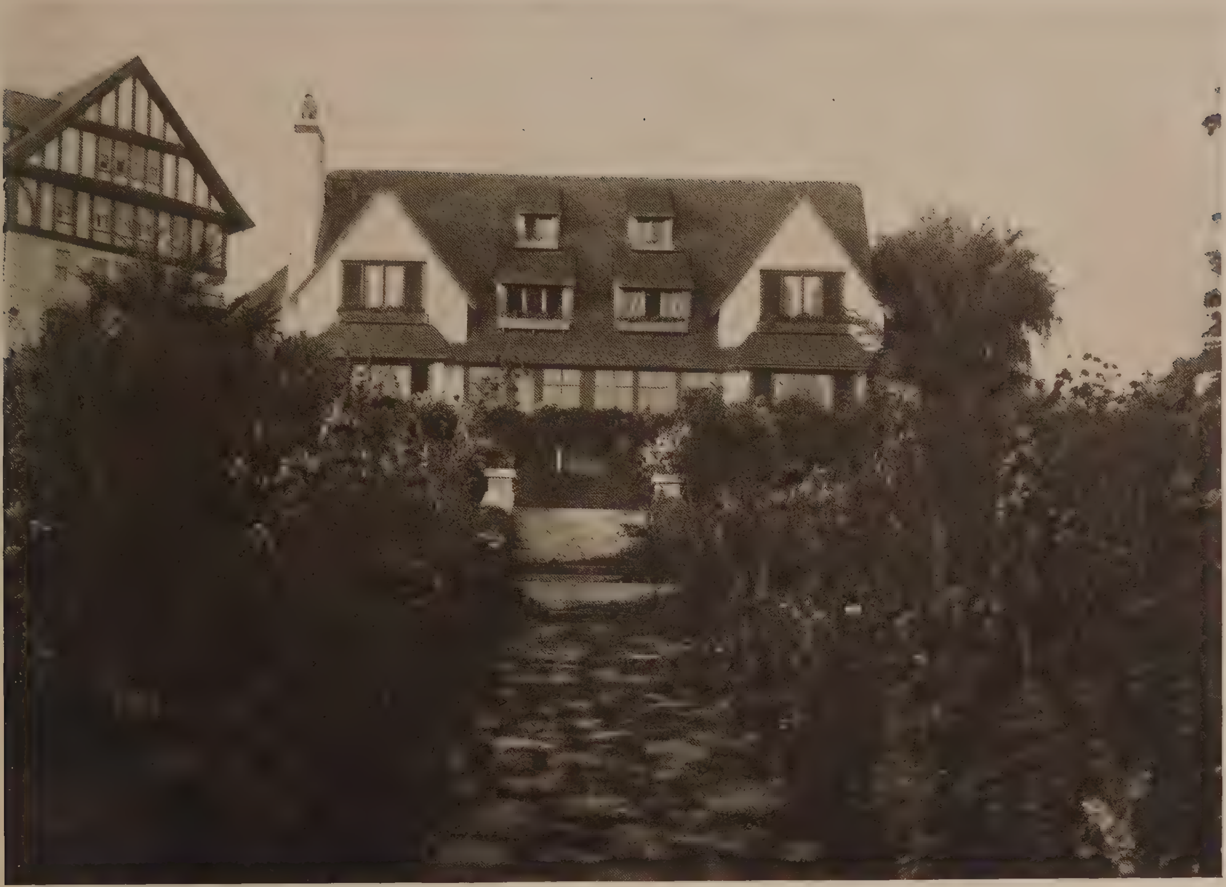
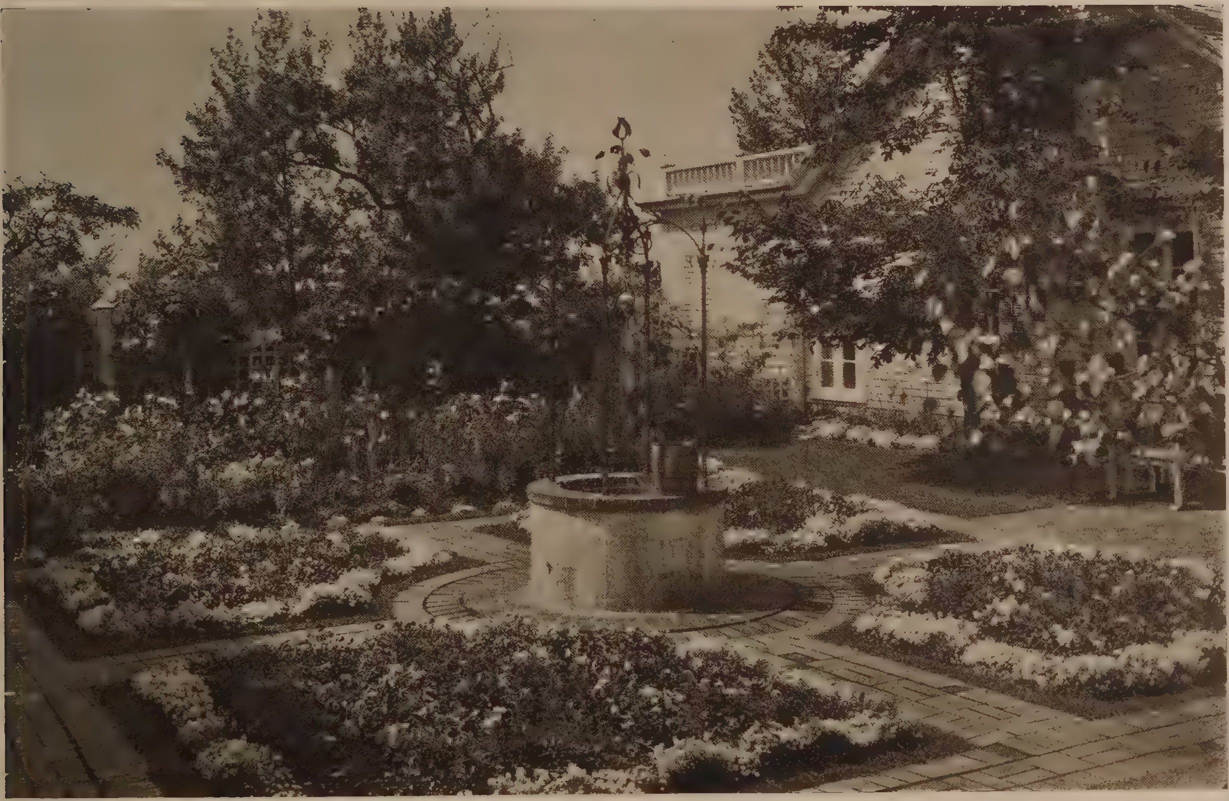
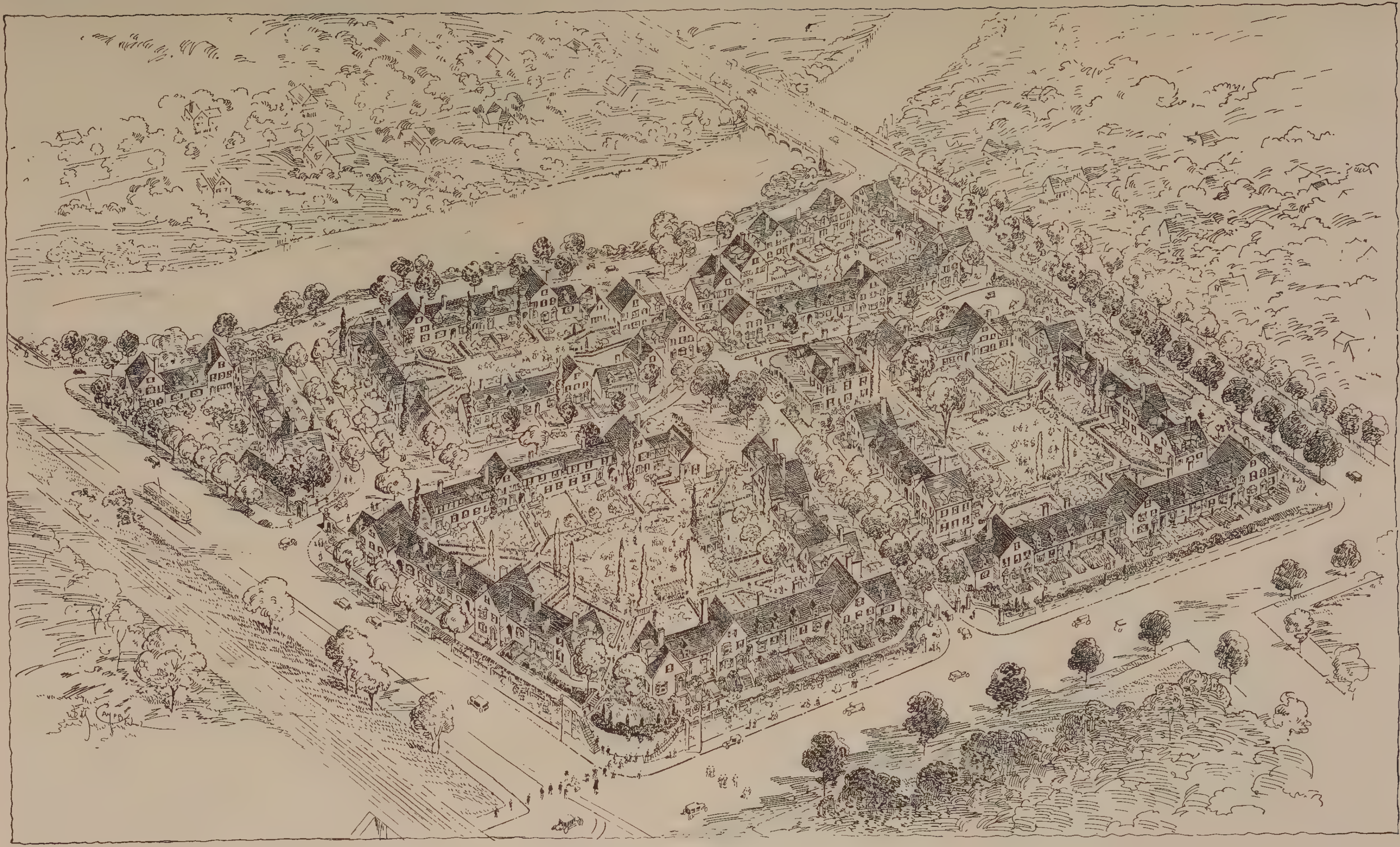




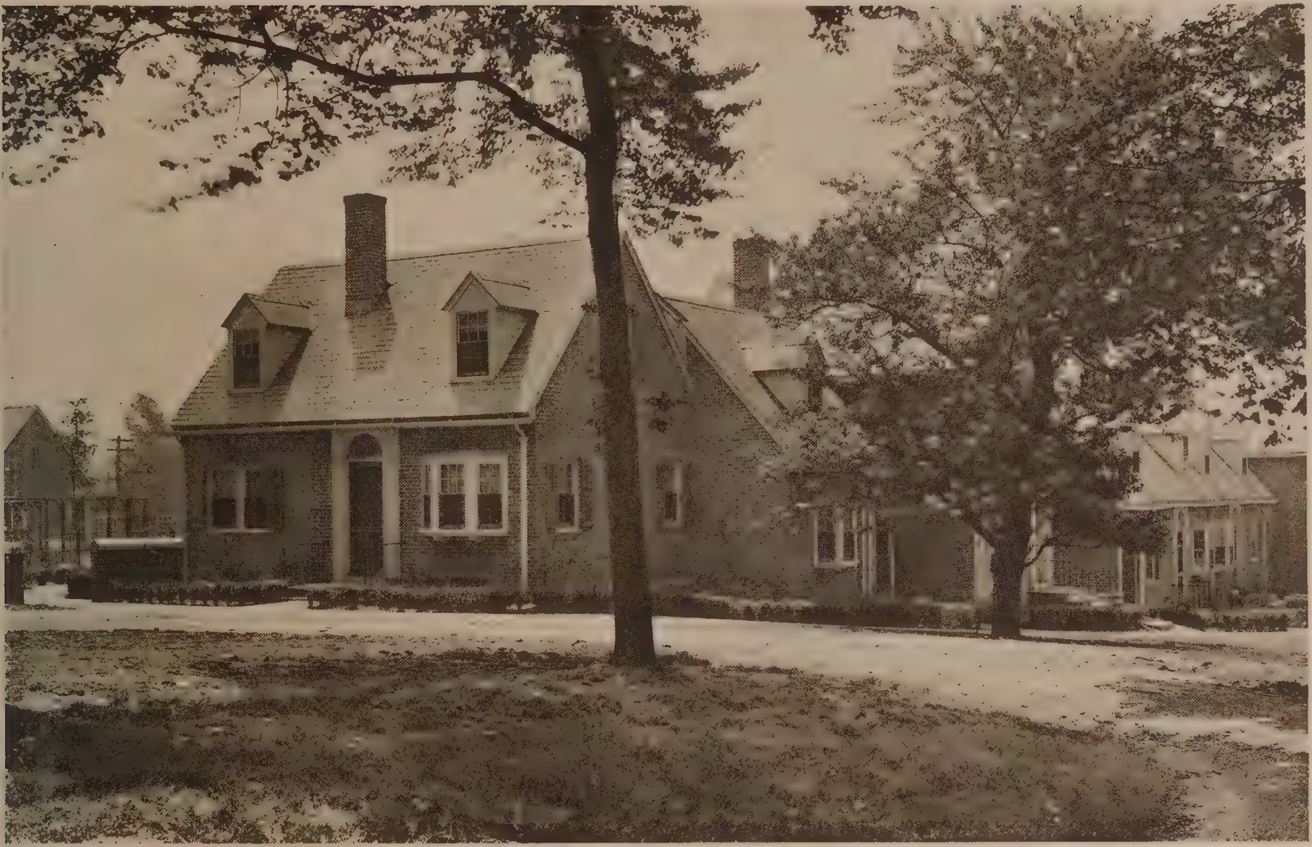
GARDENS, "PANSY PATCH," ST. ANDREW, N. B. A. Saxe, Architect.



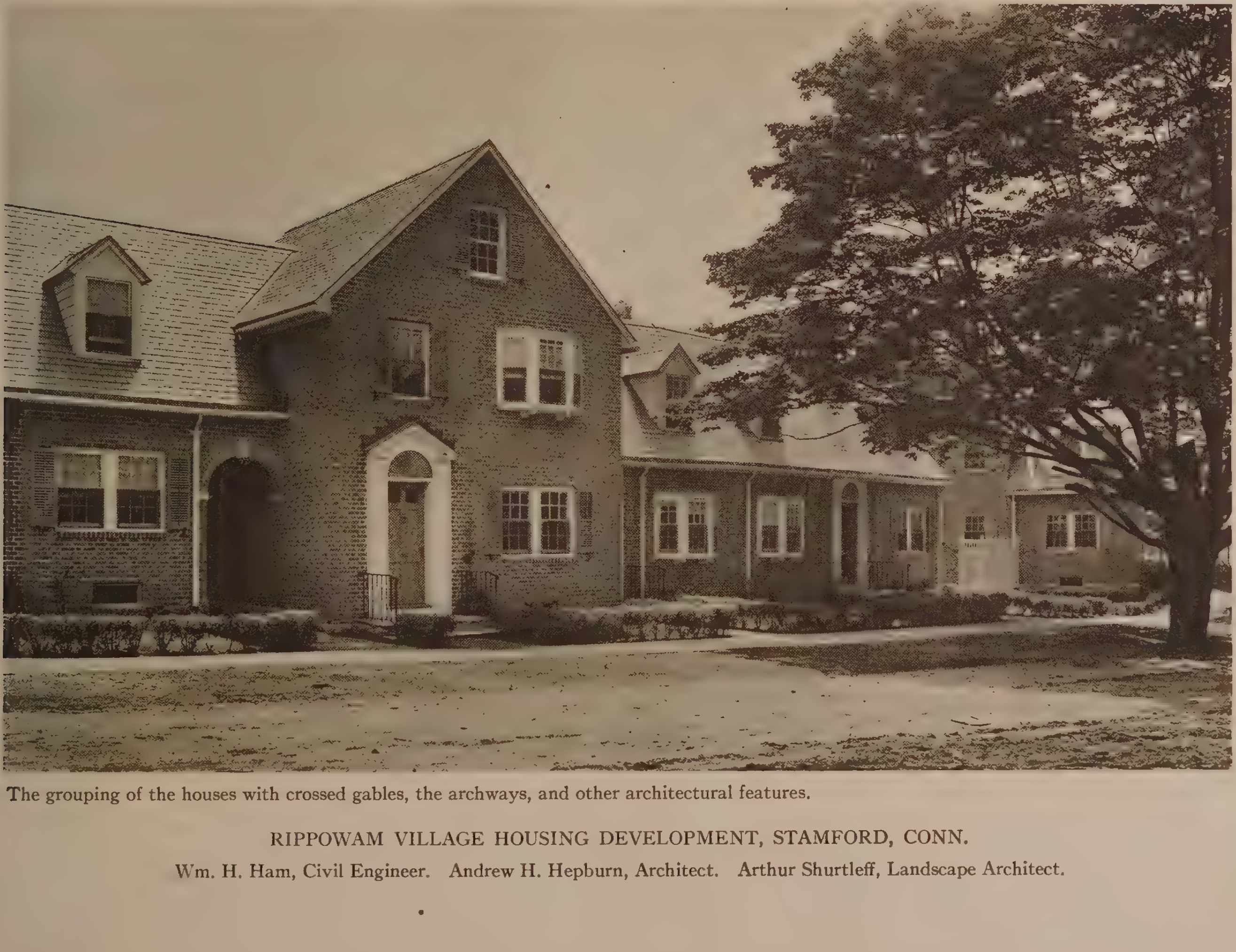
BIRD'S–EYE VIEW OF RIPPOWAM VILLAGE, STAMFORD, CONN.

The first quadrangular unit of the project is shown in the centre foreground and consists of 28 complete houses with a total of 113 rooms.

Wm. H. Ham, Civil Engineer. Andrew H. Hepburn, Architect. Arthur Shurtleff, Landscape Architect.



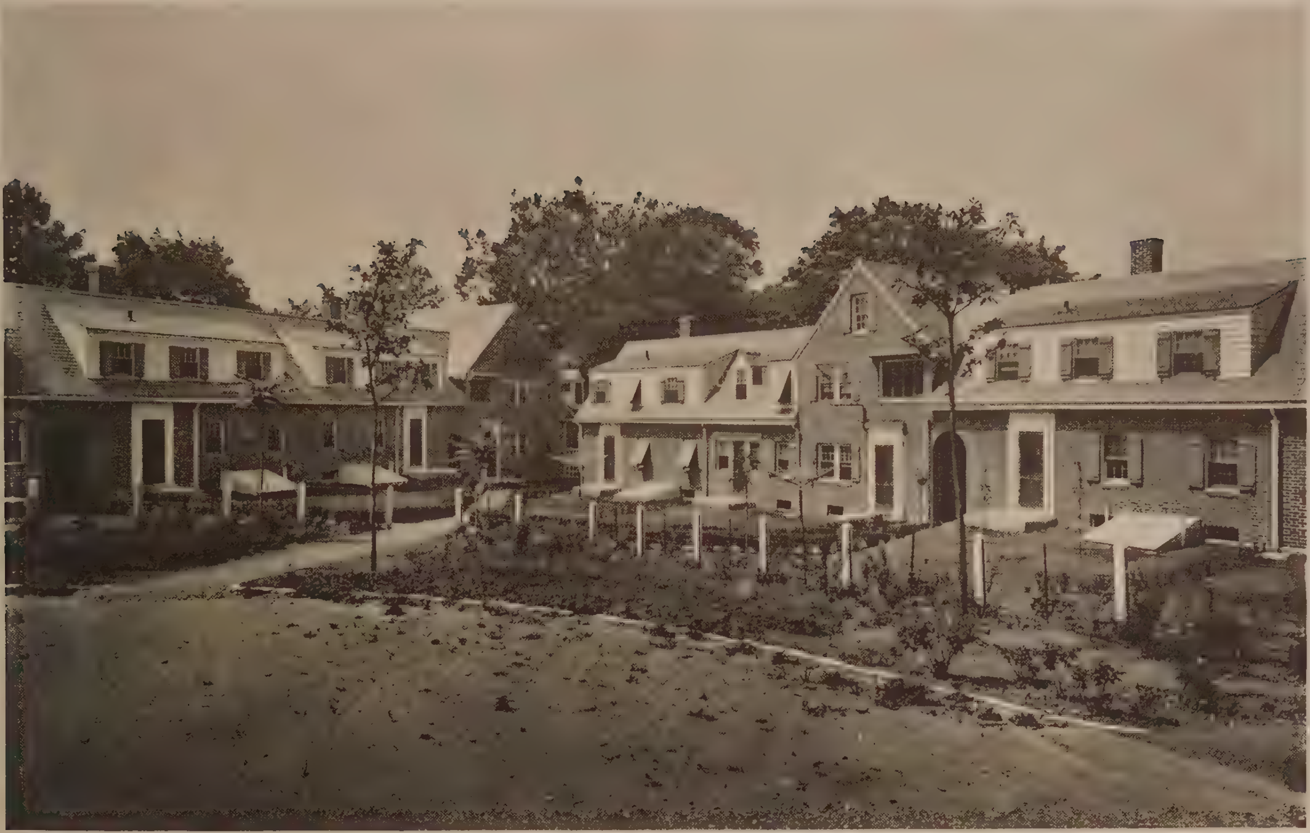
The arrangement at an irregular corner and stepping down the hill.



The grouping of the houses with crossed gables, the archways, and other architectural features.

RIPPOWAM VILLAGE HOUSING DEVELOPMENT, STAMFORD, CONN.

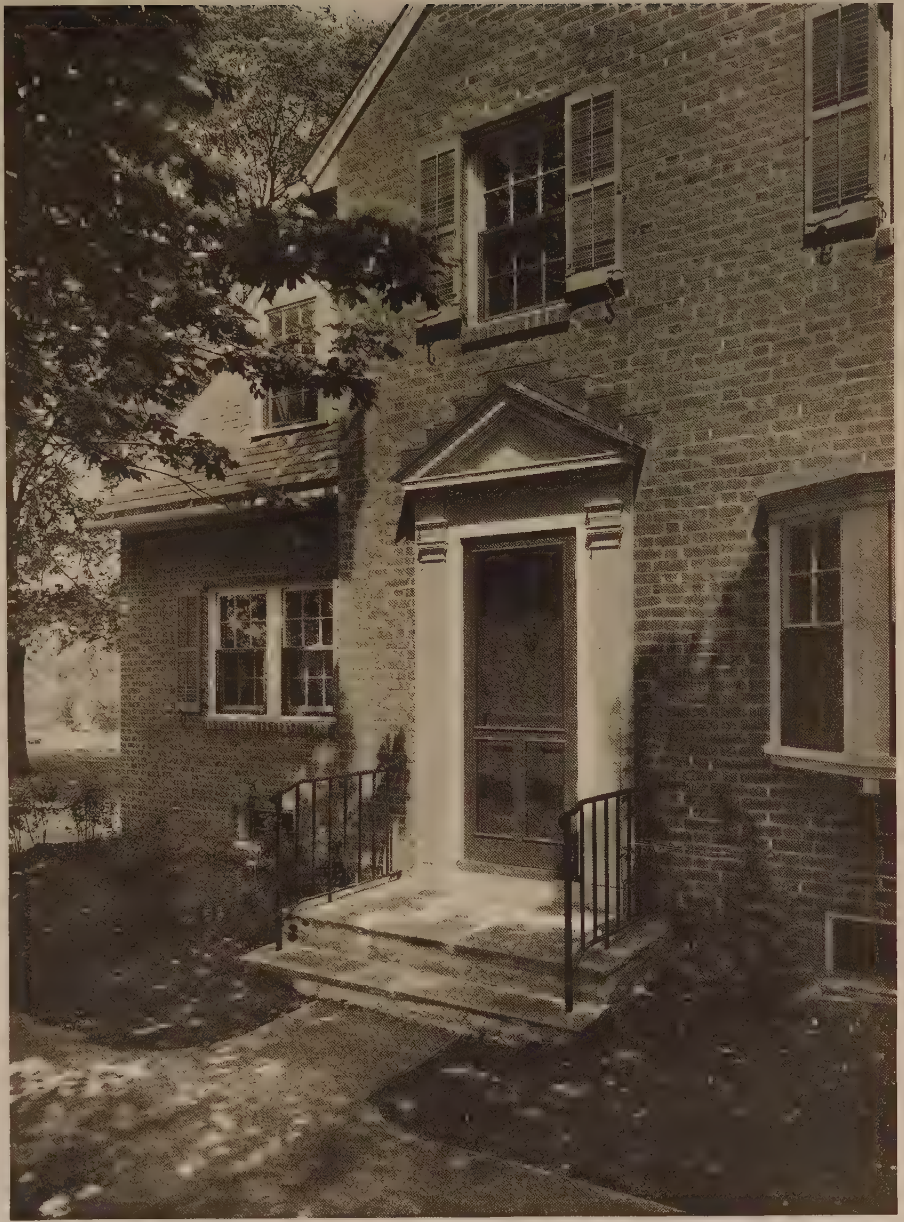
Wm. H. Ham, Civil Engineer. Andrew H. Hepburn, Architect. Arthur Shurtleff, Landscape Architect.



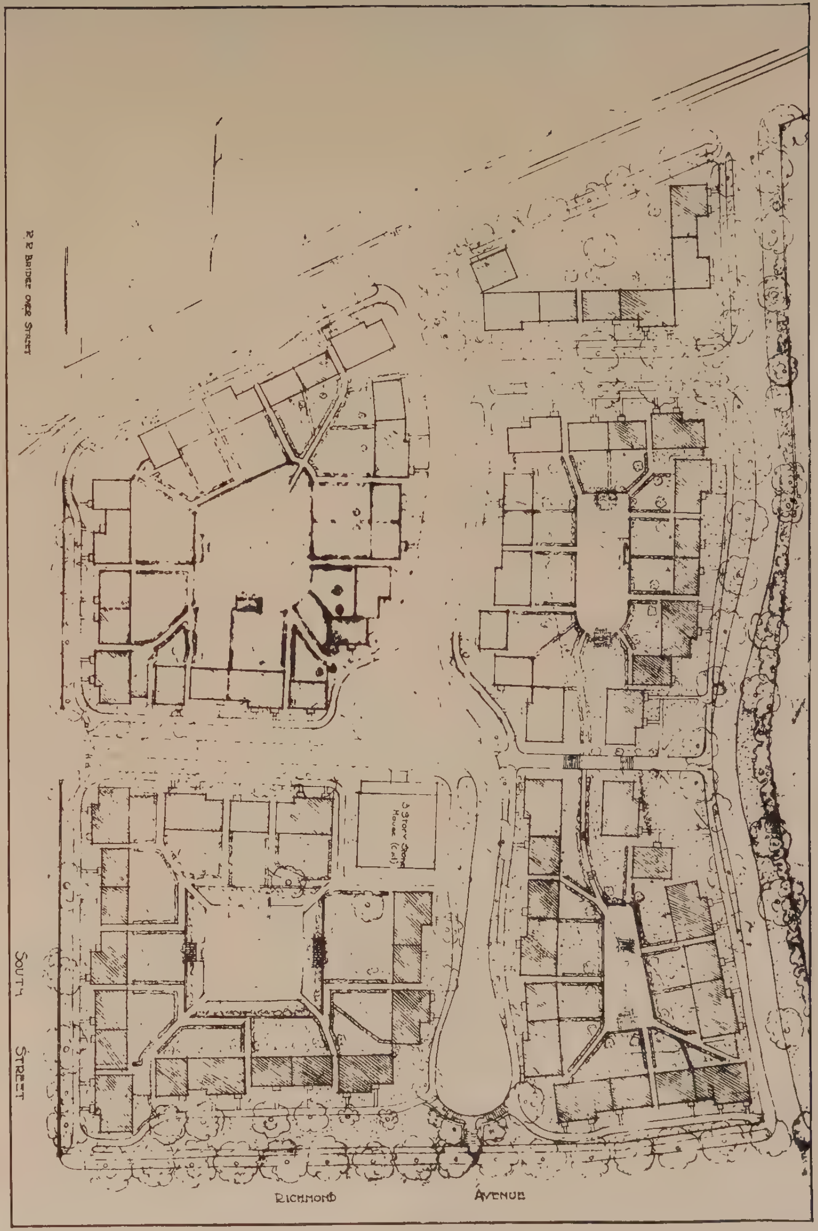
The story-and-a-half and two-story houses, with archways, up-stairs porch in the two-flat house of the three-room type in foreground and the four-room type in distance. The shed dormer demanded by the people and hated by the architect.

The bay-shaped dormers and connecting shed dormers with high windows in bathrooms.

REAR VIEWS OF BUILDINGS FACING ON GARDENS, PARK, AND PLAYGROUND.
RIPPOWAM VILLAGE HOUSING DEVELOPMENT, STAMFORD, CONN.
Wm. H. Ham, Civil Engineer. Andrew H. Hepburn, Architect. Arthur Shurtleff, Landscape Architect.



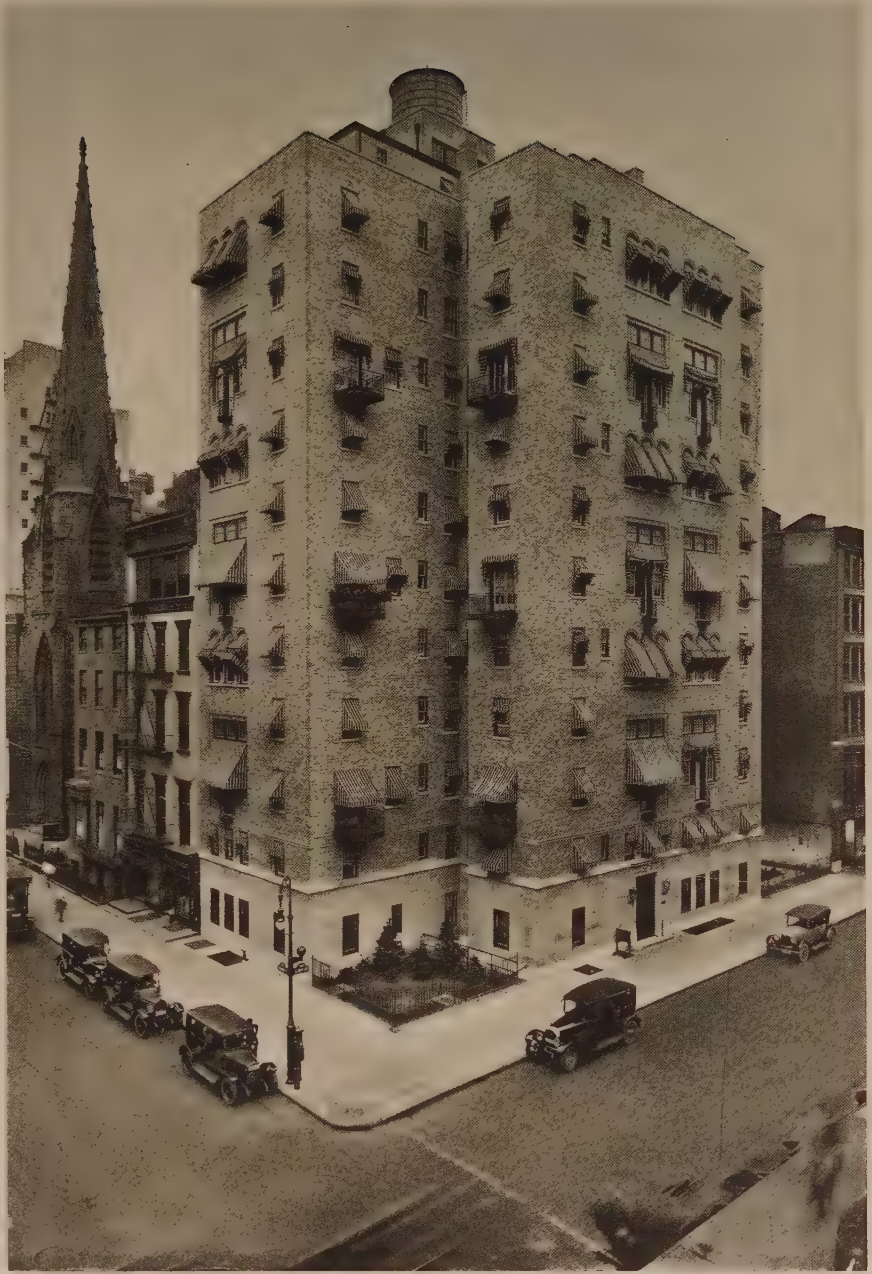
Doorway with iron rail and broken flag terrace.



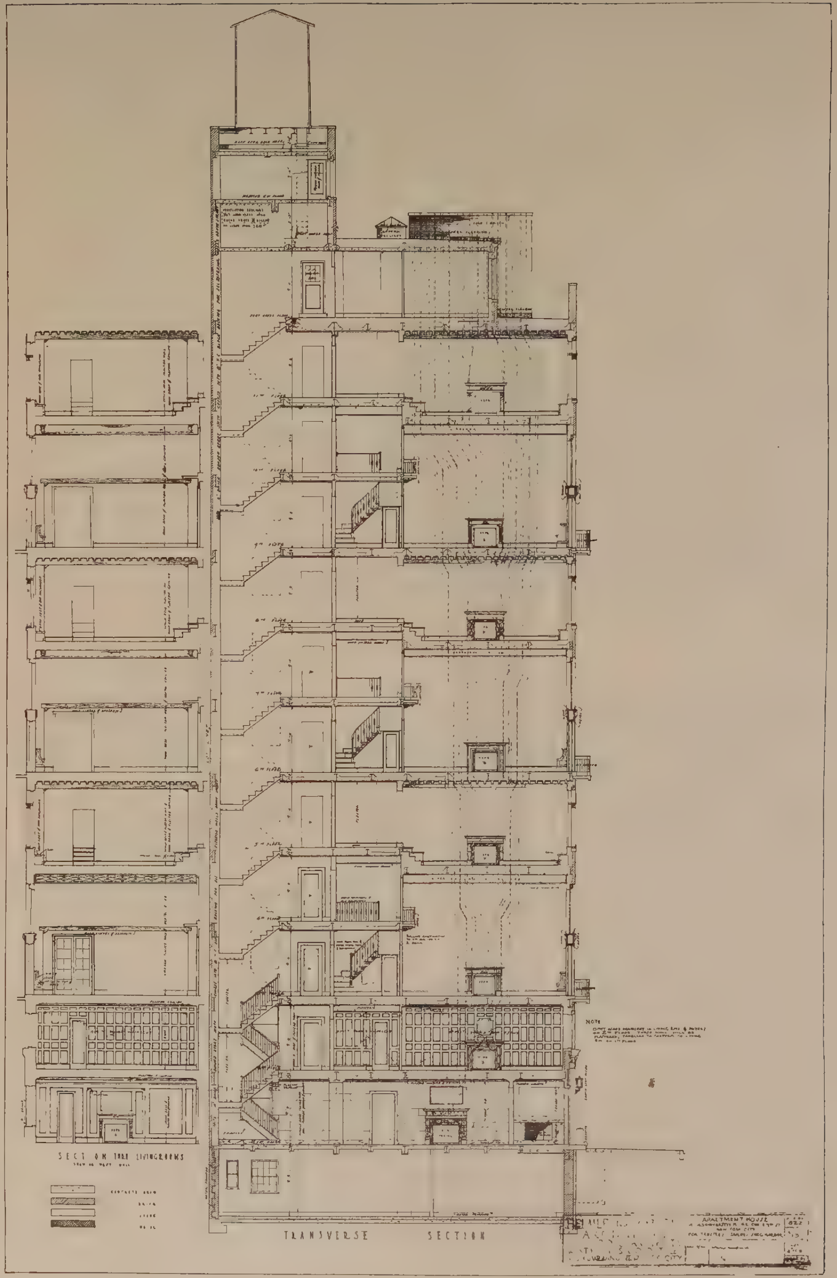
Plan showing subdivision of land in plot and general grouping arrangement.

RIPPOWAM VILLAGE HOUSING DEVELOPMENT, STAMFORD, CONN.

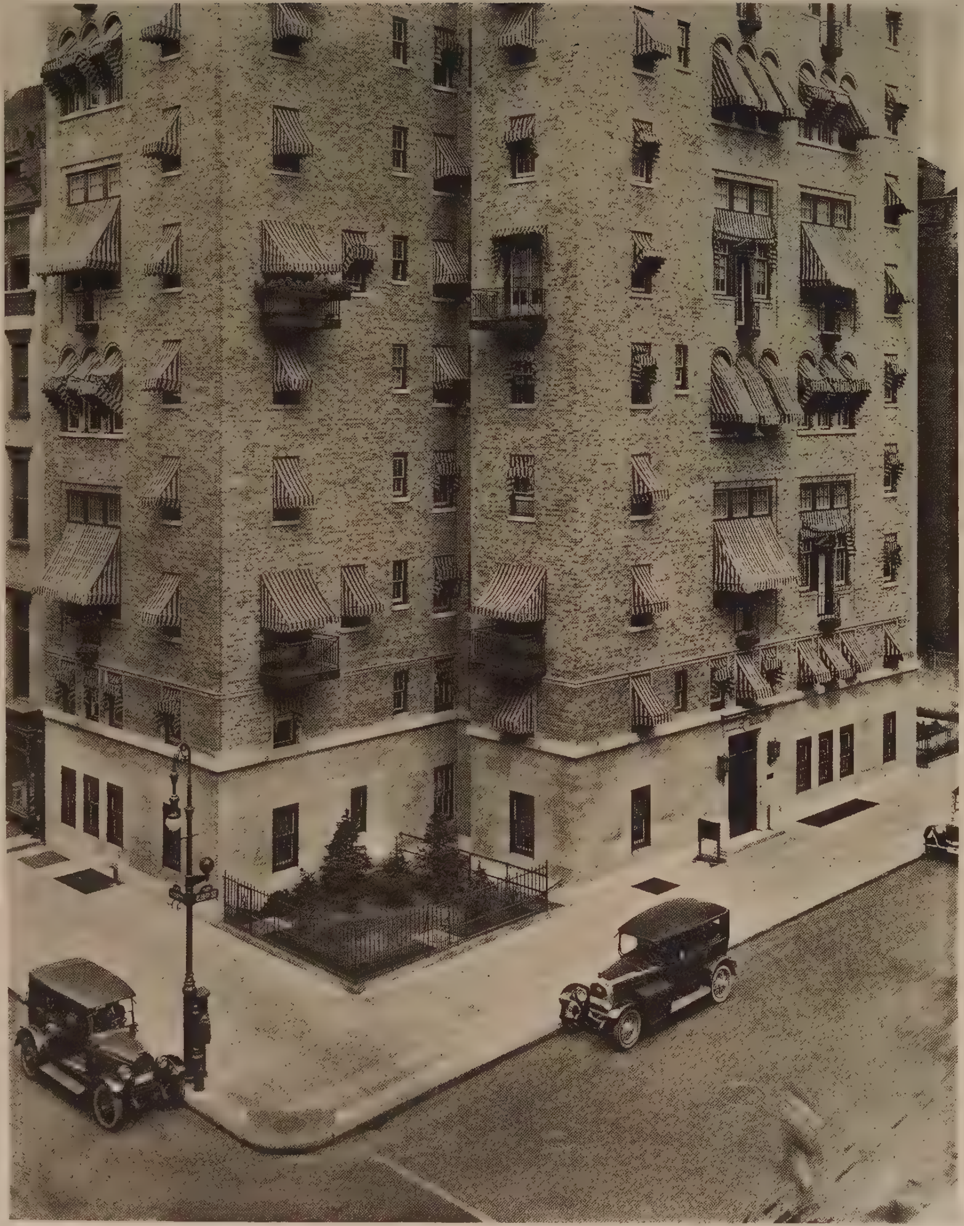
Wm. H. Ham, Civil Engineer. Andrew H. Hepburn, Architect. Arthur Shurtleff, Landscape Architect.



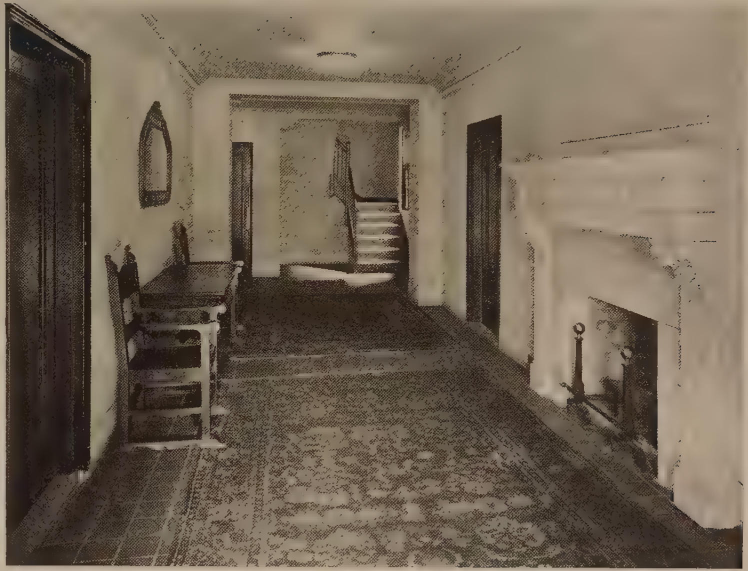
APARTMENT-HOUSE, CORNER UNIVERSITY PLACE AND 9TH STREET, NEW YORK.



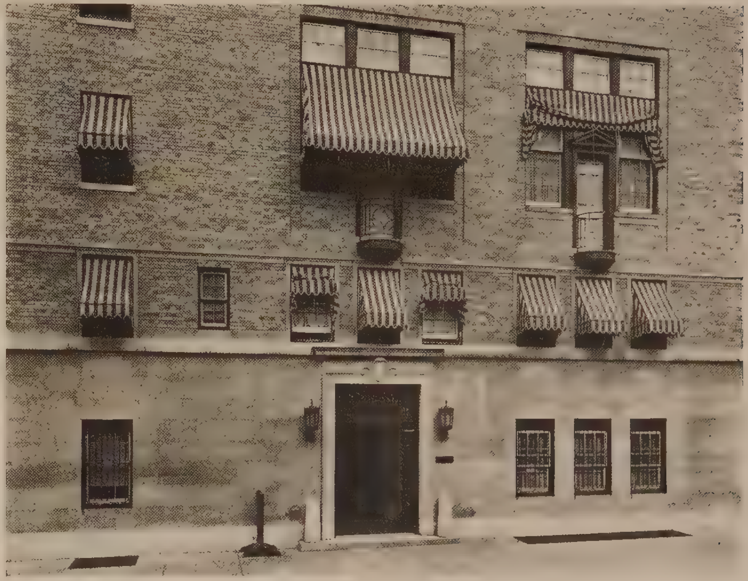
Helmle & Corbett, Architects.



DETAIL, LOWER STORIES.



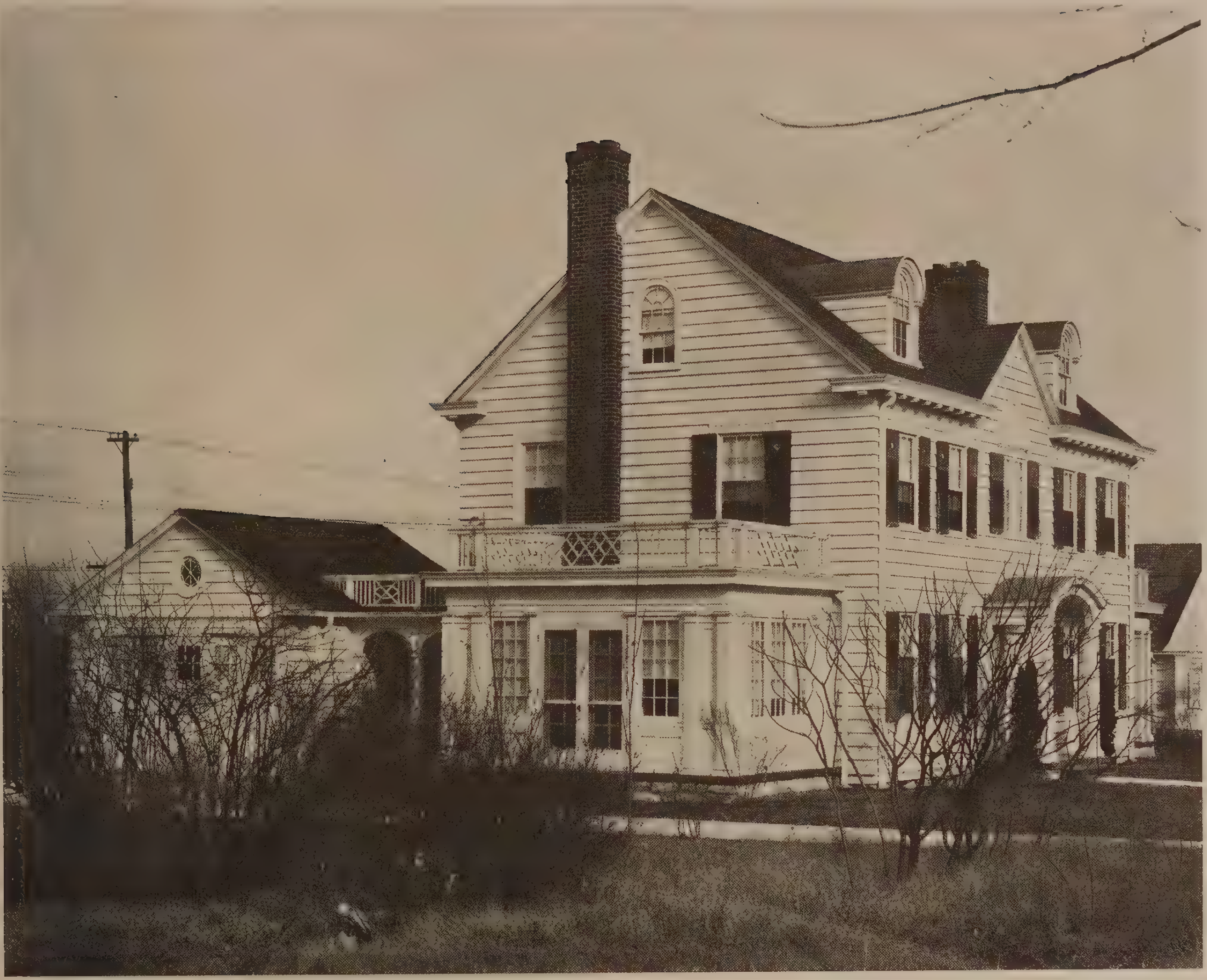
ENTRANCE FOYER.

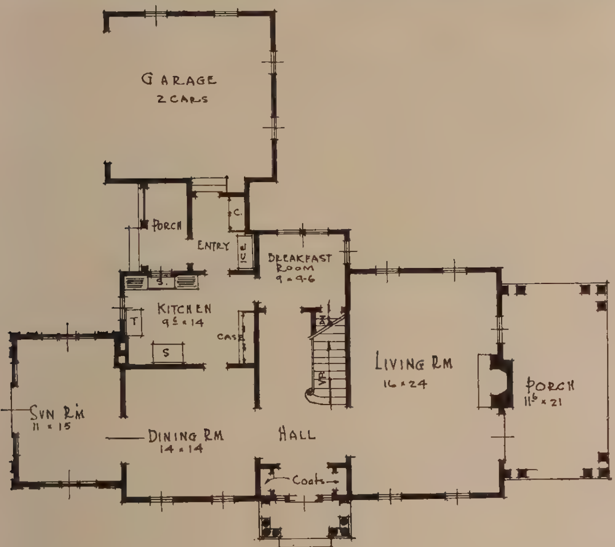


ENTRANCE DETAIL.

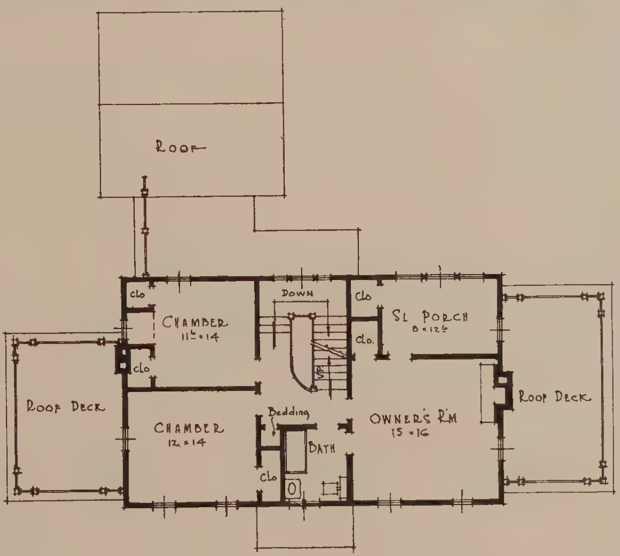
Helmle & Corbett, Architects.

APARTMENT-HOUSE, CORNER UNIVERSITY PLACE AND 9TH STREET, NEW YORK.





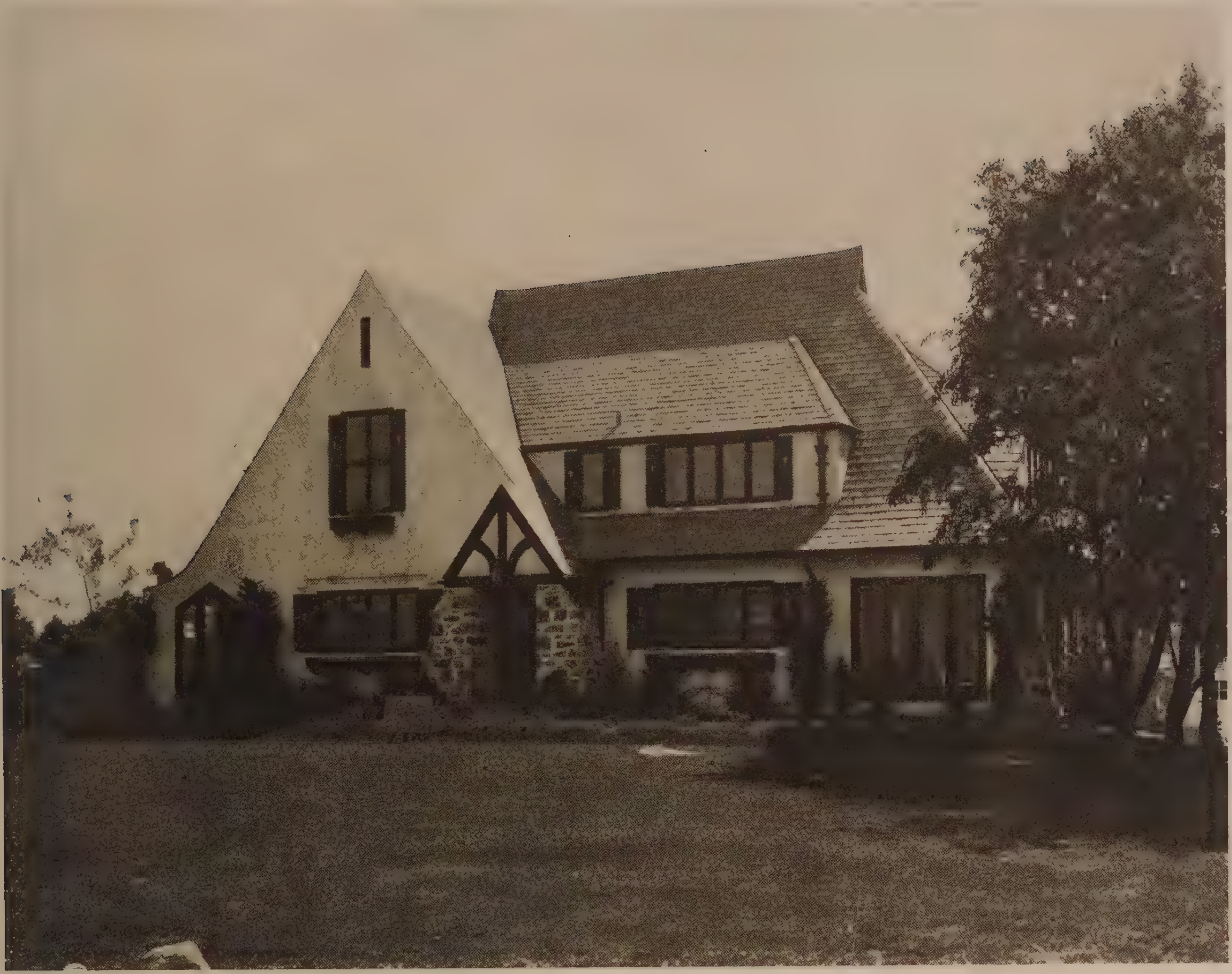
·FIRST FLOOR PLAN·

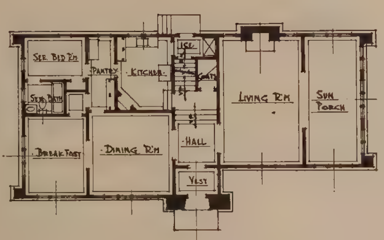


·SECOND FLOOR PLAN·

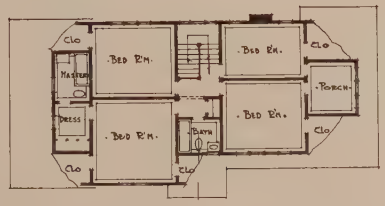
HOUSE, G. W. KERDOLFF, KANSAS CITY, MO.

Clarence E. Shepard, Architect.





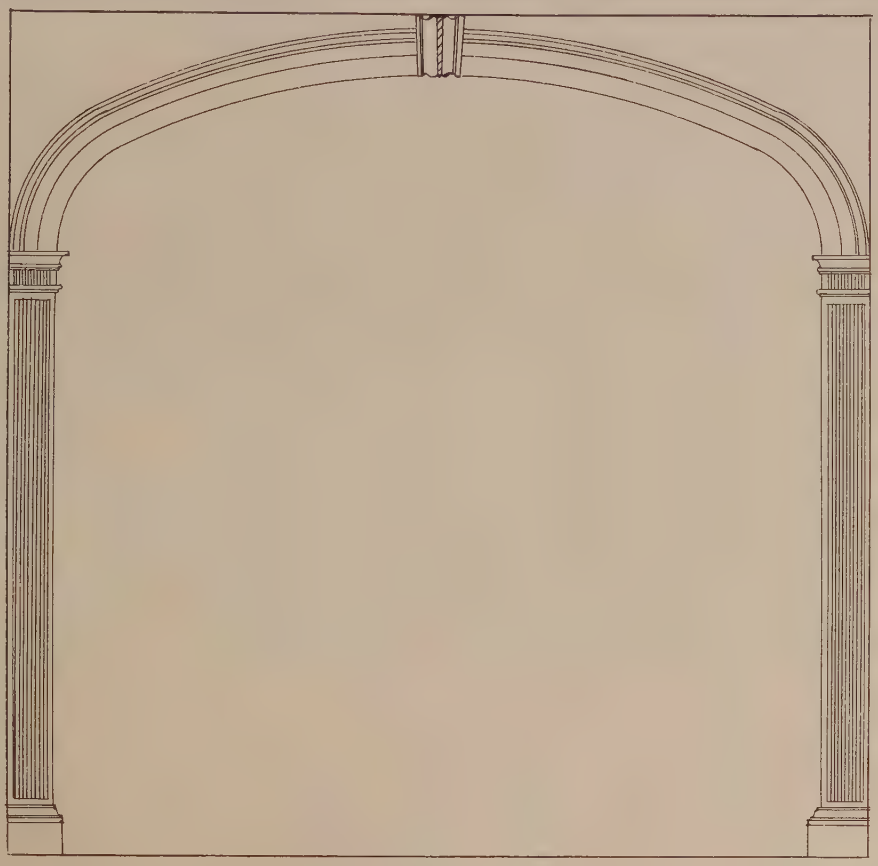
-First Floor Plan-



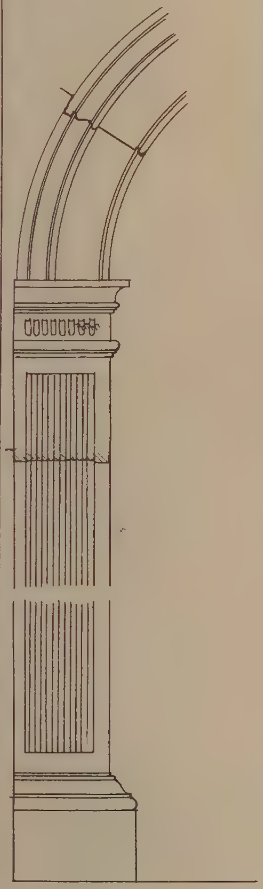
Second Floor Plan.

HOUSE AT NEW ROCHELLE, N. Y.

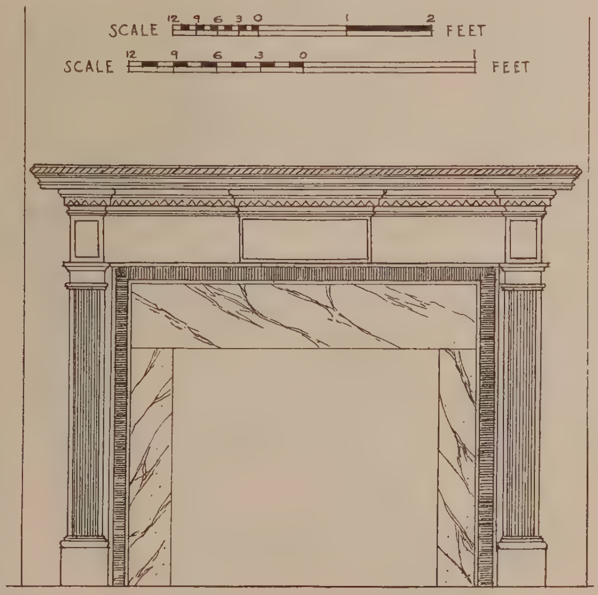
D. A. Sammo, Architect.



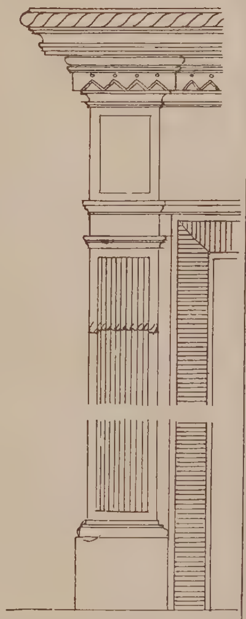
ARCH IN HALL



DETAIL OF ARCH



PARLOR MANTEL

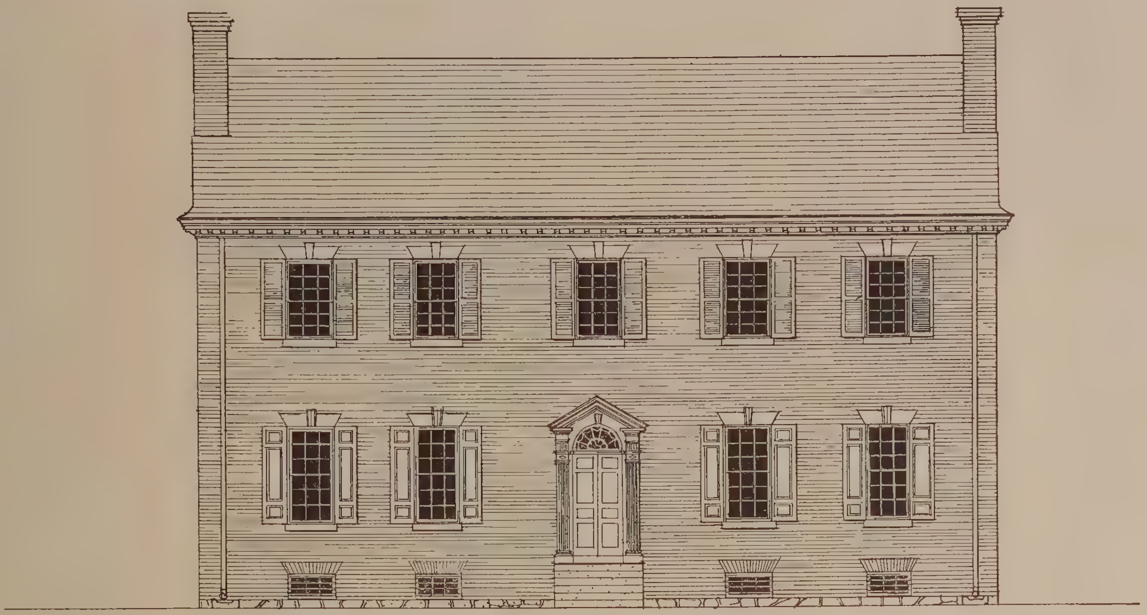


DETAIL

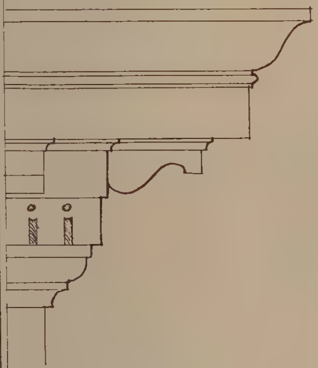
COLONIAL ARCHITECTURE
OF
MARYLAND

HALL HOUSE KNOWN AS "LOTHIAN"
ANNE ARUNDEL COUNTY, MARYLAND.
BUILT IN 1809

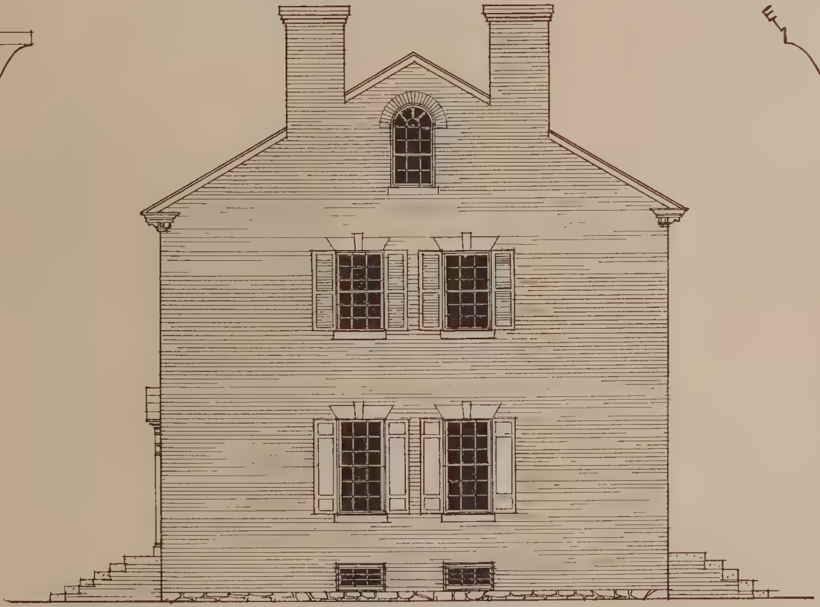
MEASURED BY ALBERT P. ERB
AND CARROLL M. MEIGS
DRAWN BY
ALBERT P. ERB



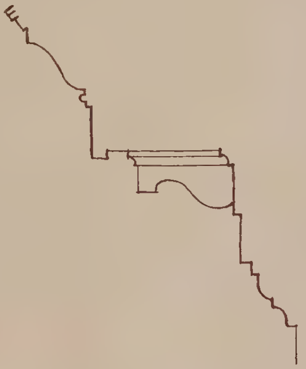
EAST ELEVATION



ELEVATION



NORTH ELEVATION



SECTION

COLONIAL ARCHITECTURE
OF
MARYLAND

HALL HOUSE KNOWN AS "LOTHIAN
ANNE ARUNDEL COUNTY, MARYLAND
BUILT IN 1809

MEASURED BY ALBERT P. ERB
AND CARROLL M. MEIGS
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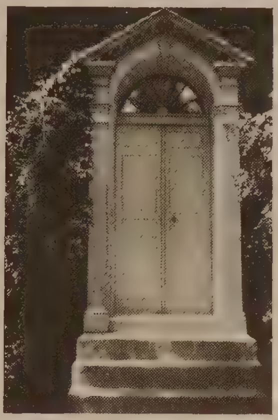

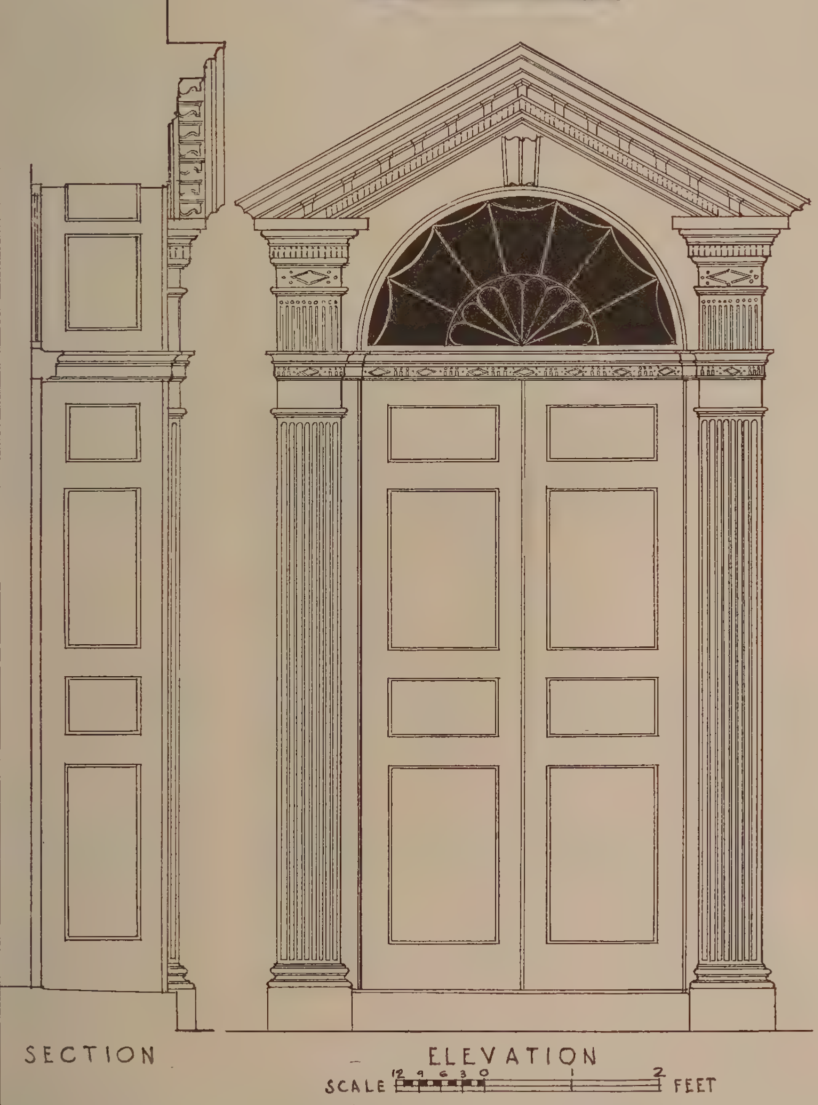

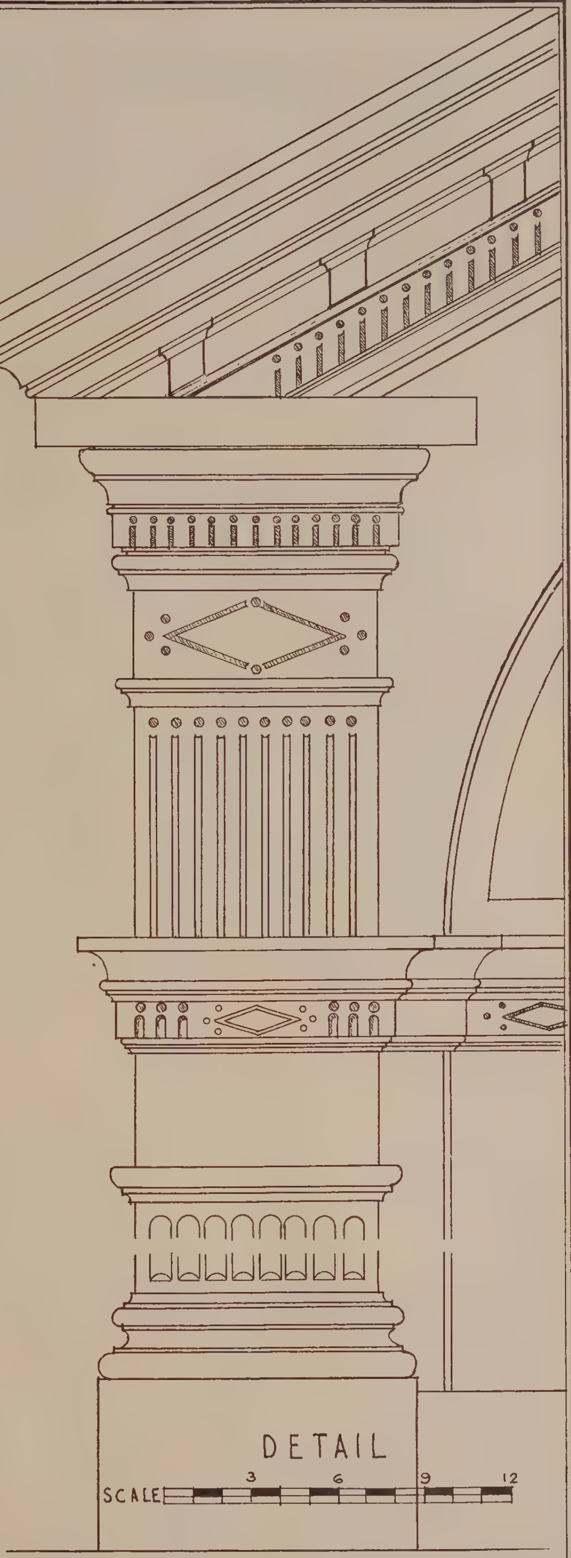

ENTRANCE DOOR

COLONIAL ARCHITECTURE
OF
MARYLAND

HALL HOUSE KNOWN AS "LOTHIAN"
ANNE ARUNDEL COUNTY, MARYLAND
BUILT IN 1809

MEASURED BY ALBERT P. ERB
AND CARROLL M. MEIGS
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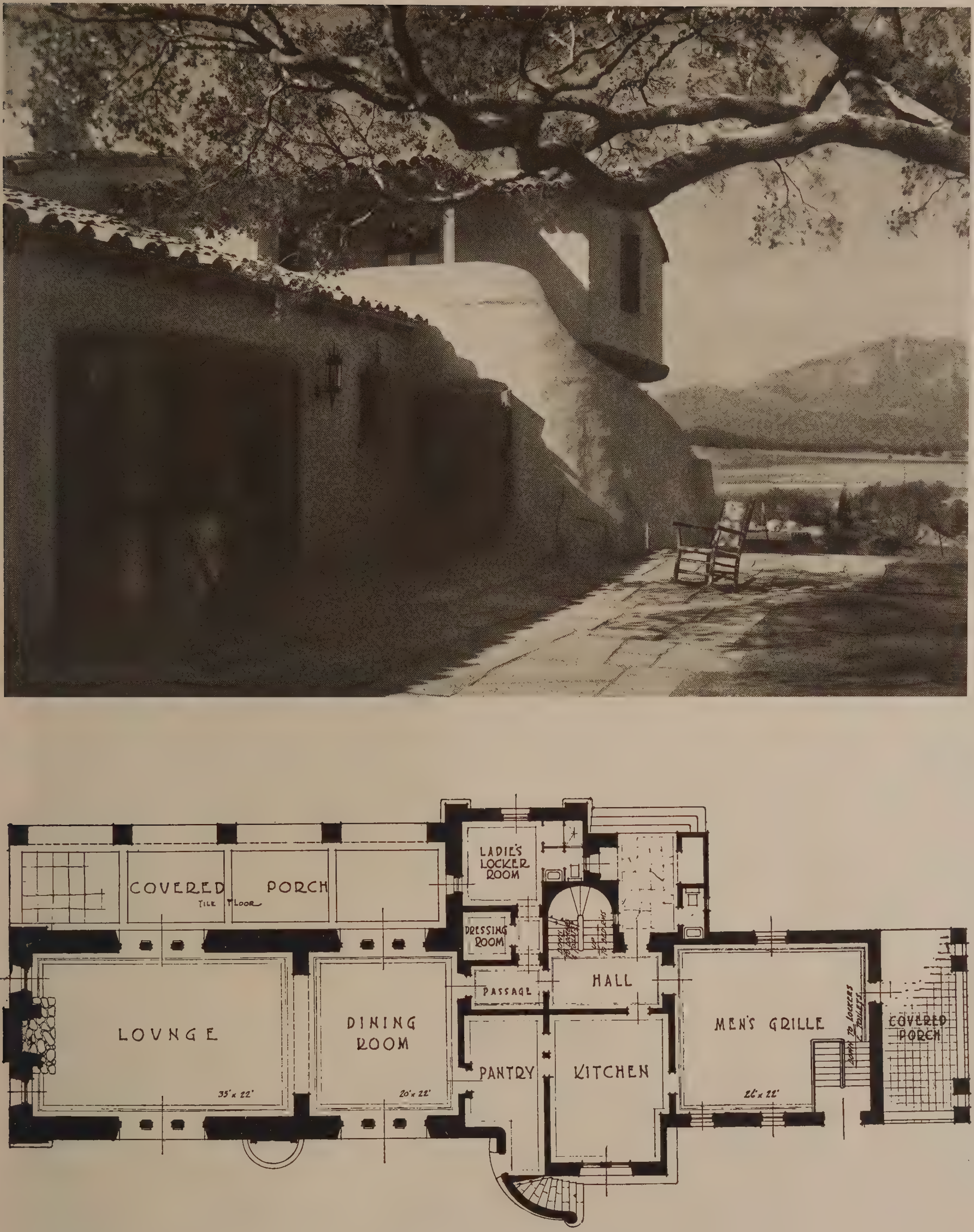
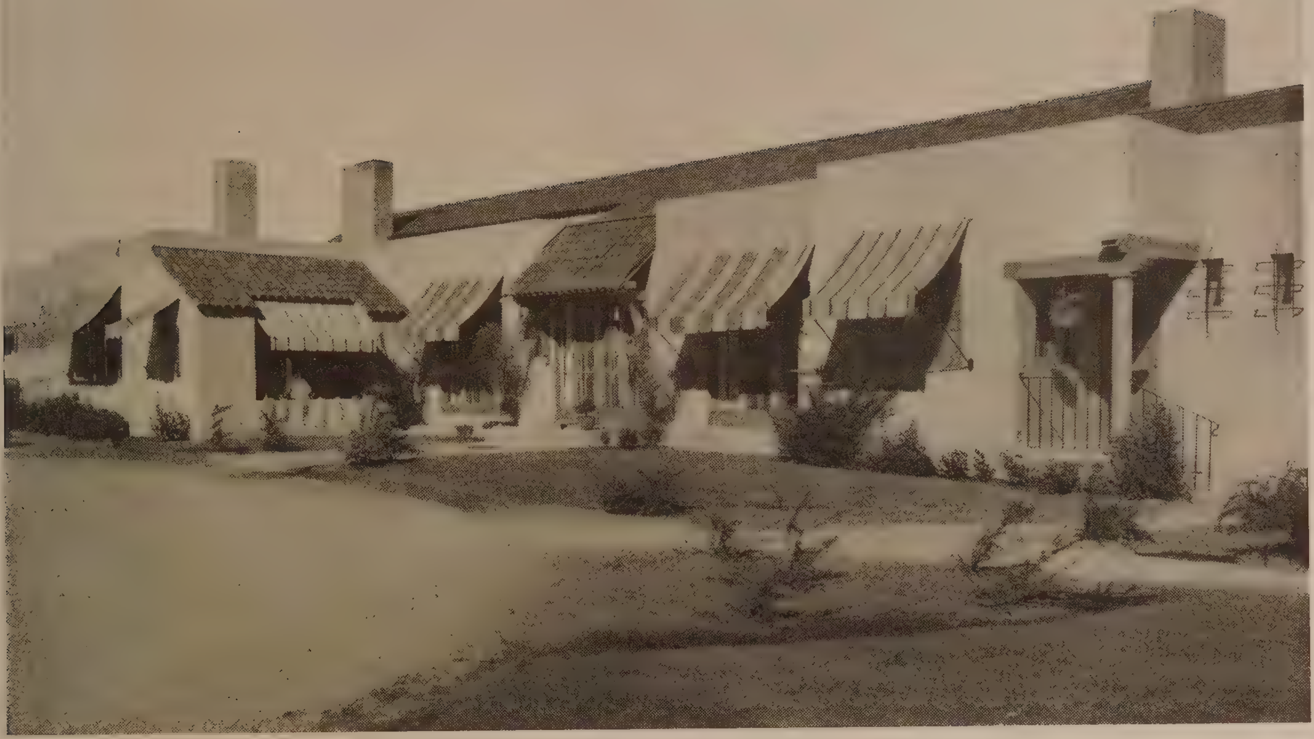
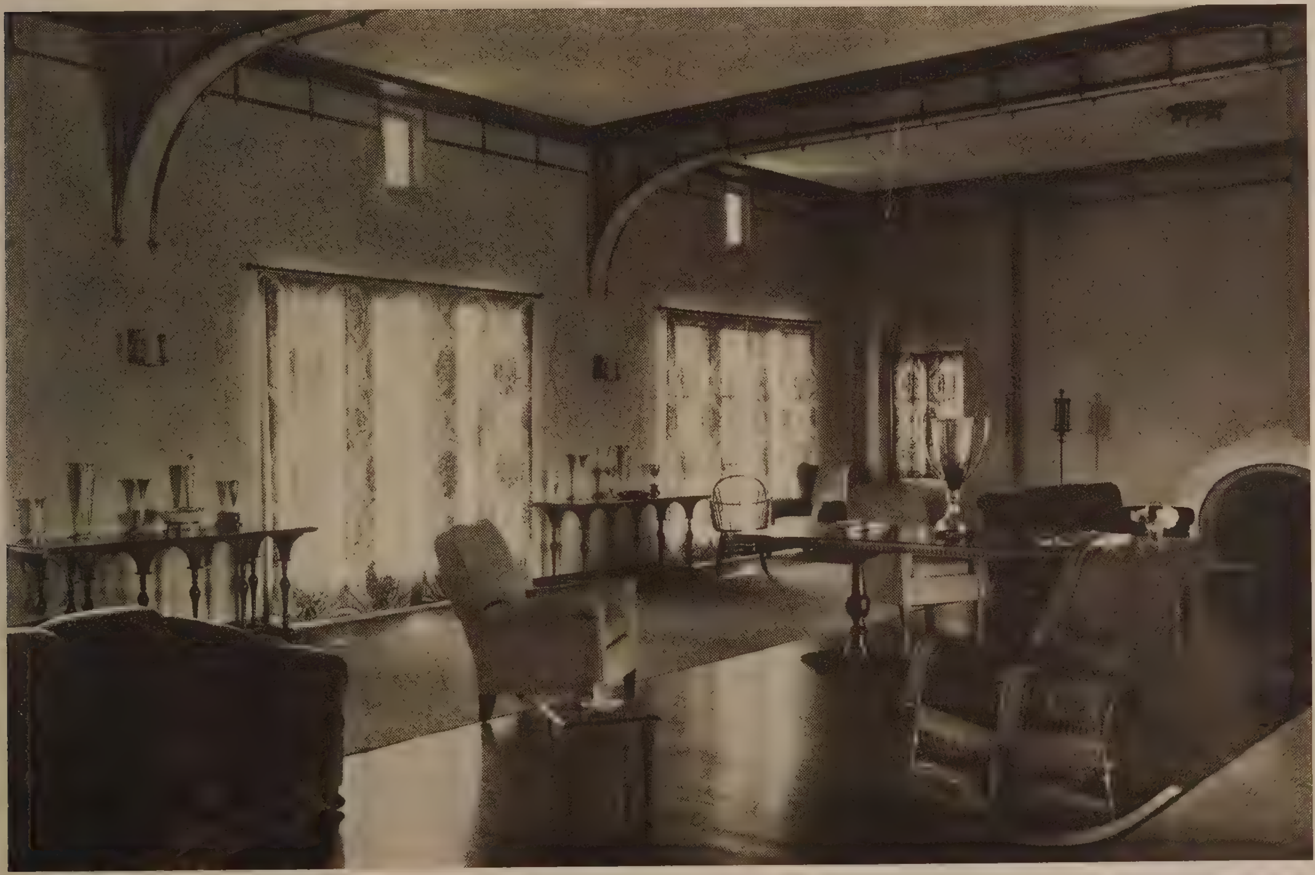


UJAI VALLEY COUNTRY CLUB, CALIFORNIA.

Wallace Neff, Architect.





VIRGINIA COUNTRY CLUB, LONG BEACH, CALIF. Sumner Hunt and S. R. Burns, Architects.

Two California Club Houses

Virginia Country Club, Long Beach

IN planning the small country-club building it is ordinarily found necessary to make a number of more or less important sacrifices. That is, in order to keep the construction cost within the prescribed limit, it is quite naturally the custom to dispense with certain very desirable features altogether and to cut down on some of the essential ones as much as possible. The country-club building illustrated herewith, however, although comparatively small, possesses a plan that is unusually complete, as well as uncommonly well arranged.

The building which constitutes the home of the Virginia Country Club, of Long Beach, California, has a total length or width of 190 feet and a maximum depth of 47 feet, exclusive of certain extensions of paving about some of the entrances. It possesses a long main-entrance foyer, an ample-sized assembly-room, both a dining-room and a men's grill, a delightful little lounge-room for women, shower and very commodious locker rooms both for men and for women, a charming sun alcove in the ladies' section, an excellent kitchen, with both a storeroom and a refrigerator-room, very complete servants' quarters, and all the usual convenience auxiliaries. There is also an enjoyable cement-paved terrace, 47 feet 6 inches long by 15 feet deep, off the rear of the assembly-room, while under the service end of the building is a good basement.

Built in early Spanish architecture, the building, which is but a single story in height, presents a low and rambling appearance that seems especially appropriate to the gently rolling terrain of its location. And not only does it constitute a charming representation of this style, but its exterior color scheme helps to make the building particularly attractive.

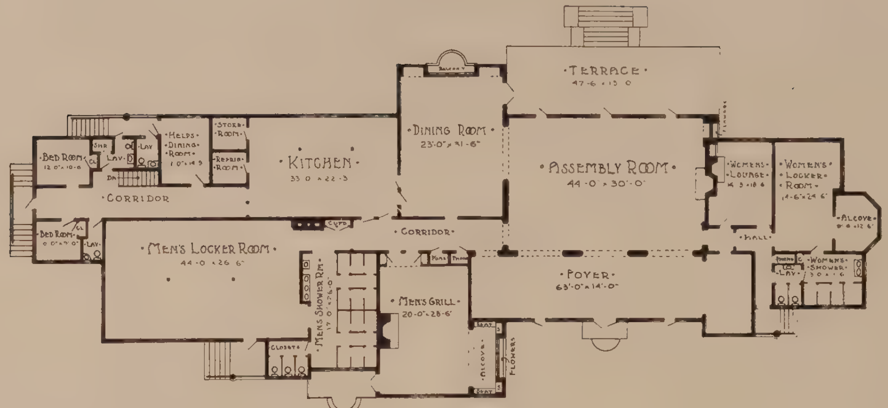
The outside walls are of cement-stucco over metal lath and framework, and are tinted in a light-cream shade. The roof is comprised partly of roofing tile and partly of composition. The tiled portions are naturally given the more prominent positions, and they present a limited and very effective variegation of colors, ranging from light buff to dark red. The composition roofing is, of course, laid over a comparatively flat surface, and consequently hidden by the somewhat higher-reaching walls. The wood trimming of the exterior is done in dull green, and the railings at the less-prominent entrances and the grille-work at some of the windows consist of black iron. The outside color scheme is further contributed to by a rather liberal employment of window-awnings, of bright-colored stripes.

Main entrance.

The foundation and basement walls are comprised of concrete. The latter are finished inside with cement, and the basement floor also is of concrete and cement. All entrances are provided with cement-paved stoops, and the cement floor of the large terrace off the assembly-room is tinted in a light red.

The interior woodwork consists of Oregon pine throughout, and all walls are plastered. In the foyer, assembly-room, dining-room, men's grill, women's lounge, the two locker-rooms, and the little sun alcove, the woodwork is finished in greenish-gold stain, and the walls are tinted in golden ochre. In the kitchen, shower-rooms, and lavatories, both the woodwork and the walls are done in white enamel; and the dining-room and bedrooms of the servants' quarters are finished with cream-tinted walls and green-stained wood-work. Oak floors prevail in the

Terrace front.



Plan Virginia Country Club.

foyer, assembly-room, dining-room, women's lounge, and the two halls leading off from the assembly-room; cement floors are found in the shower-rooms and lavatories, and pine flooring is used in all remaining divisions.

The principal rooms are attractively and comfortably furnished, and the equipment of the utility rooms is thoroughly practical and modern. The kitchen, for instance, besides the large storeroom and special refrigerator-room, is equipped with combination ranges with ovens, broilers, and so forth, a large steam-table, a special metal cleansing tray for silver and glassware, sandwich and pastry tables, and all the other customary facilities. In the basement there is a petroleum-burning heating-plant which supplies heat to all parts of the building.

The floor plan will doubtless be found especially worthy of study. Minor features which perhaps deserve to be brought to attention in it are the built-in telephone booths, the several small closets, the alcove with its built-in seats in the men's grill, and the two built-in flower-boxes. Fireplaces will be observed to be features of the assembly-room, the men's grill, and the women's lounge. The assembly-room is, incidentally, utilized on occasion for dancing.

The building is located on a tract of 135 acres, held under a twenty-year lease, with the privilege of purchase. The club possesses an eighteen-hole golf-course, and has a total membership of about 400.

The building was designed and its construction supervised by Messrs. Sumner Hunt and S. R. Burns, architects, of Los Angeles.

Ojai Valley Country Club

Wallace Neff, Architect

MOST typical of California is the Spanish type of architecture, so reminiscent of the early mission days when the padres strove to educate and convert the Indians, and when rich Dons, living in their picturesque haciendas, ruled over the vast cattle-grazing ranges now largely given over to the kingdom of the orange.

A particularly pure example of that tendency is this club-house, situated on a knoll commanding a sweeping view of the picturesque Ojai Valley, a spot famed for its beauty throughout California. The building is low and rambling, after the manner of the old Spanish ranch-houses, and is sheltered by stately old oaks. Flagstone terraces, whitewashed walls, and red-tiled roofs provide a combination of color and texture that faithfully preserves the atmosphere created by the type of architecture.

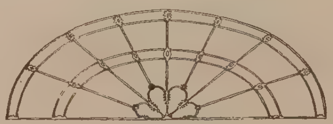
The club-house was adjudged the most adaptable and artistic built in Southern California in 1923, by that chapter of the American Institute of Architects, which awarded the architect, Wallace Neff, a Certificate of Honor for the work.

An odd exterior detail may be seen in the view shown herewith—a shuttered door set in what appears to be a huge boulder. The wrought-iron window-grating and artistic lamp of the same metal, beside it, add a pleasing touch to the details of the façade. In all, the architect has attained the high art of adapting one's architectural scheme to environment.

The interior arrangement, as seen in the accompanying floor plan, is done with a careful consideration of convenience and the special requirements of a club-house designed for both sexes. Main lounge and men's grill, at opposite ends of the building, both have covered porches, while at the end of the living-room is a large fireplace with sloping chimney-breast running to the open roof. A row of old Spanish tiles is the only decoration to carry out the extreme simplicity of this fireplace.

The walls of the rooms are everywhere a rough, sandy white, and the big, rough-hewn ceiling-beams, iron-bound, have the appearance of being very old. Warm Spanish colors relieve the dulness of walls and ceilings, with rugs and hangings of gay hues tastefully placed.

Such details in decoration as hand-wrought light fixtures in rusted iron, Mexican chairs covered with native pigskin, crudely made pieces of furniture, and doors of rough-hewn lumber painted in brilliant colors shading down into soft shades, carry out the pure Spanish motives so consistently followed by the structure's general design.



Rippowam Village, at Stamford, Conn.

By William H. Ham

IN these days when we are surrounding civilization with a thoroughly organized effort toward idealism, when our architects have thrown off their shackles of Victorian badness, and our furniture makers are leading the way in making homes comfortable with attractive furnishings, it is a great pleasure to have carried out a project in which idealism has prevailed, and find that the public is marching abreast of the designer and is ready to accept the form of home which satisfies the demands of art, economy, and the reduced size of the home unit which results in efficiency in household cares.

Rippowam Village is located on the old Ferguson property adjacent to the Stamford railroad station. It is divided into four units, the first of which has just been completed.

These homes, which have pleased the people of all stations of life, are a group of single and two-family houses with artistic setting, fronting on lanelike streets, with four play courts and a private garden for each family.

In accord with the land value, a density of fourteen families to the acre was used. The variable-unit size, one of the most important requisites of economy so fully developed in apartment-house construction, has been introduced with skill and interest in these villagelike houses.

These houses are nestled together in a villagelike group in such a way as to overcome any feeling of the too-smallness of the three-room unit, or any oversize of the eight-room house next door.

Rippowam Village facing railroad.

The outstanding feature of design which makes these houses possible in their straight-forward simplicity, dictated by the engineer, is the piercing of the walls with a service entrance through the arched openings, thus bringing the service from the street to the rear of the blocks of row-houses, without using the alley system. This is novel and daring. It is the keynote in the scheme and worthy of more than passing notice.

The land on which Rippowam Village was built is of such value that a concentrated form was demanded. The choice lay between the overcrowding by building of a series of apartment-houses, or the more open type selected, in which is a reservation in the centre of each of the four blocks for the use of and to furnish protection for the children, the development taking the form of a city village. Each family has its own garden surrounded by a hedge or fence. Each house has its front on the street, and also a front on the garden, for these houses are built to avoid the appearance of back-doorness anywhere.

The reservation is for the small children, and is laid out with the experience gained with seven playgrounds of similar size. If any restrictions are to be put upon this area, they might be epitomized in a simple phrase: from the baby carriage to ten. If every block has its playground for the small children, and our city parks are more walkable and less drivable, we shall sacrifice less children to the street.

These houses are built from standardized plans, which have had a most careful study for number of rooms, room-sizes, and equipment and, what is more important, the possibility of combining the different types in an interesting development, repeating freely without monotony, using but four types of houses, being so combined as to give a variety of sizes in harmony with the demand, and a range from three to five rooms in the first quadrangle, with plans for introduction of the six and seven rooms in the same type of house.

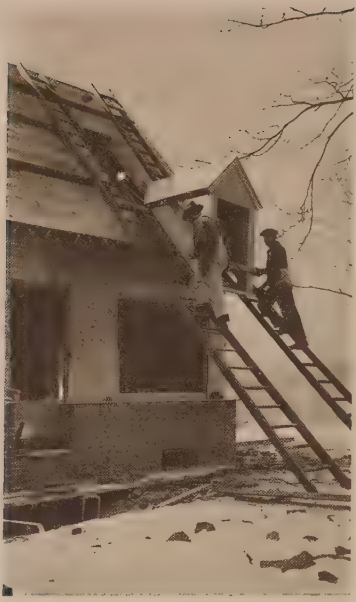
Before these houses were started a complete model was made, which helped not only with the placing of the different types so as to fit comfortably on the land, but also to show the contractor how to lay out his work. This model shows how elastic the scheme of the combination of standard units can be.

These houses are of the story-and-a-half and two-story types, combined in such a way as to present the large gable of the two-story house to the street front, thus giving the broken roof line, with its interesting features varied at will of the designer, to overcome the monotony of repetition with simple rectangular houses.

The building trade has been criticized by other trades, and the building professionals have been most severely criticised, for their lack of ability to standardize the home units in such a way as to develop economy. The answer that the professional always makes is that with the standard unit home repetition results in monotony, and stamps as low-class attempts at standardization where it reaches the exterior of the house.

The contractors who have built houses on speculation have done this very thing without the aid of the professional, both in row-house types and in individual-house types, and have produced a result which does not satisfy either the requirements of an art loving public, or the more serious requirement of retention in value of the home.

Rippowam Village was designed with the intention of overcoming both of these serious difficulties, and it is happily successful in pleasing not only the architect who has visited it, and the trained observer, but also those very lay



Fabricated dormer being brought to opening in roof.

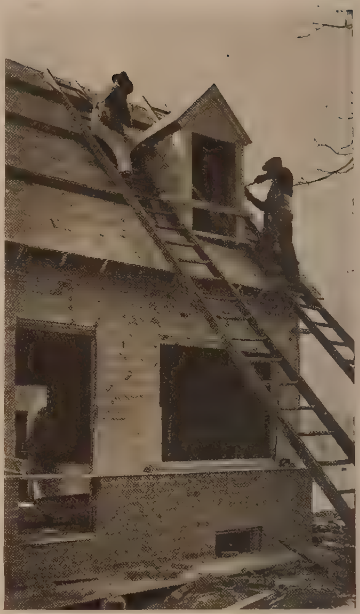
people who have no pretense whatever of knowledge of the fine arts, and who have come in thousands in their working clothes, the honest overalls of the shop, and every one has been impressed with the appearance of these houses, and from the designer's standpoint this is the most gratifying.

With the permanent materials used in Rippowam Village, it would seem entirely feasible so to care for the maintenance of the buildings themselves and the grounds, as to prevent deterioration and obsolescence working their heavy charge, which is so unfortunately the normal condition in houses built on speculation in the suburbs of all of our great cities.

The experience in New York in many of the small row-house sections would indicate that where a sufficient number of houses can be put under the control of a single ownership long enough to renew the fronts on a truly simple style, and revamping at small expense the interiors, houses which have passed to a very low value can be immediately reclaimed and resold. Beacon Hill, in Boston, has a large number of streets where the small-type row-houses have not only retained their value from the beginning, but have shown increased value in proportion to the cost of the land, and the cost of building construction. This Beacon Hill section in Boston is a fine example of what central locations, easily accessible to the industries and offices of the city, can do with a protective association of owners, and is one of the best examples of the use of the row-house, and it was on Beacon Hill where archways through the walls of the building approaching the rear of the houses were found in the search for a precedent for developing these in the village at Stamford.

Living-room.

The life extension plan has been developed by the insurance companies during the last decade to overcome the devastation of neglected disease. We have not yet in any very large measure undertaken the life extension plan as related to the value of the individual home, but have allowed the depreciating influences to creep into a community through the selfishness and greed of some one or two individuals, and have sacrificed tremendous areas in our cities thoroughly adapted to present-day home life because of the lack of protection of the individual by the group. Rippowam Village has been built with the intention of so tying up the interests of the individuals that the most natural result would be to act in common on matters of interest to all residents, and the expectation is that such villages will protect themselves against the deteriorating influences to which all communities are susceptible.

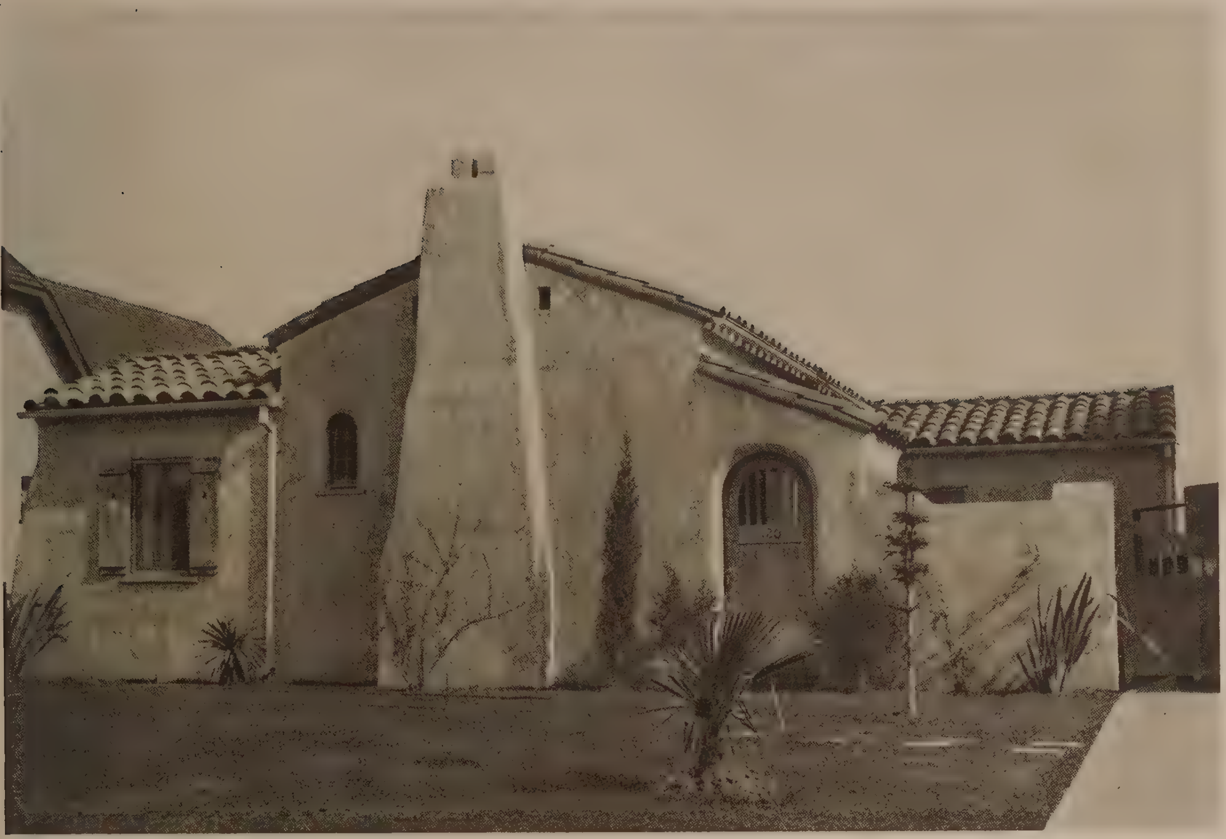


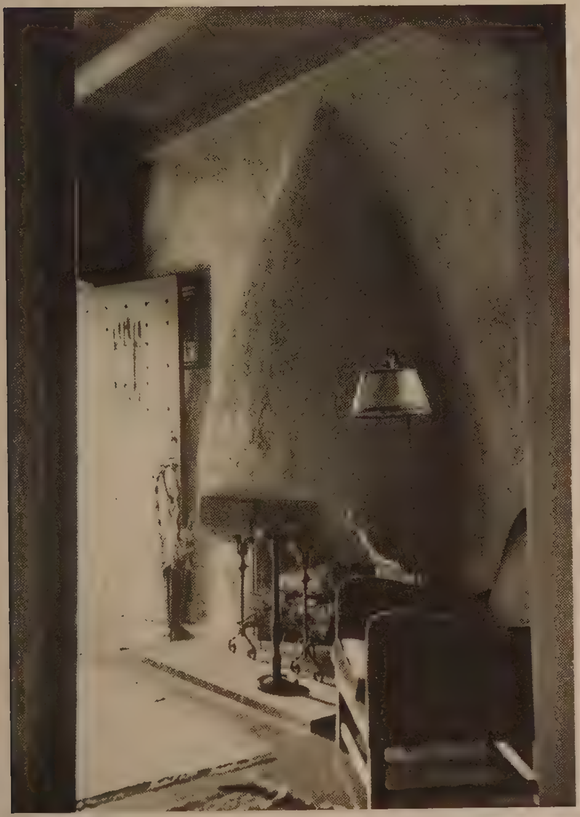
Fabricated dormer being placed

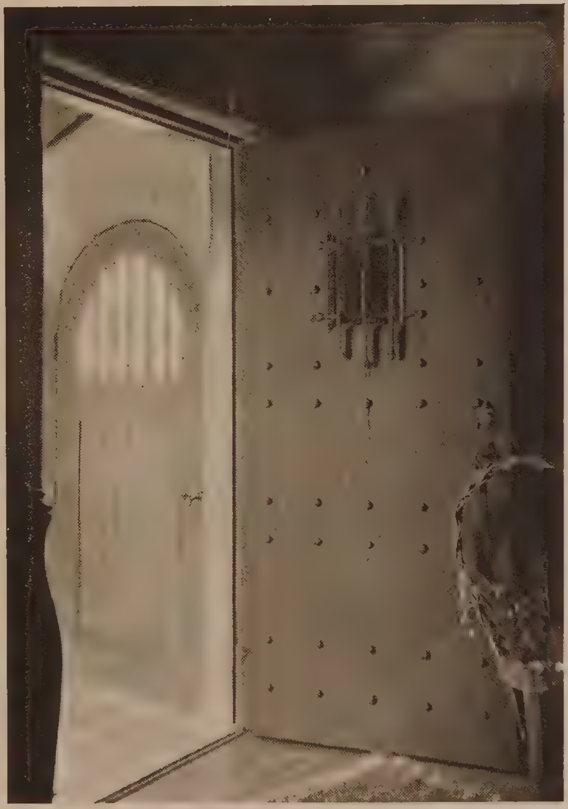
The great advantage of extending the retained life in the building itself through permanent materials used in construction, and the reduced obsolescence charge, is very apparent to all who have studied the problem of housing from the economic side. Some day, somehow, somewhere, the architectural profession, the engineering profession, the building constructor and the banker must meet this problem face to face. The United States to-day is building just about enough to replace the homes destroyed by fire, or abandoned because of obsolescence. No statement is more common than that the house which is ten years old has been seriously injured by time, or the other expression: "I am not interested in real estate. It does not pay."

The fundamentals of value depend upon the retained value in the house quite as much as upon the first cost, and this retained value is influenced by the homelikeness of the community more than by any other feature. It is the honest conviction of those who have studied most carefully the design of these houses, that with the construction items thoroughly standardized, construction cost can be lowered very materially by the continued repetition of the houses of the same types, and through a very large development of shop-fabricated parts, thus making the building programme of this type of home a very much simpler problem than can be done in the building business, where each house is a new unit with new problems, and a large amount of uncertainty as to labor requirements.

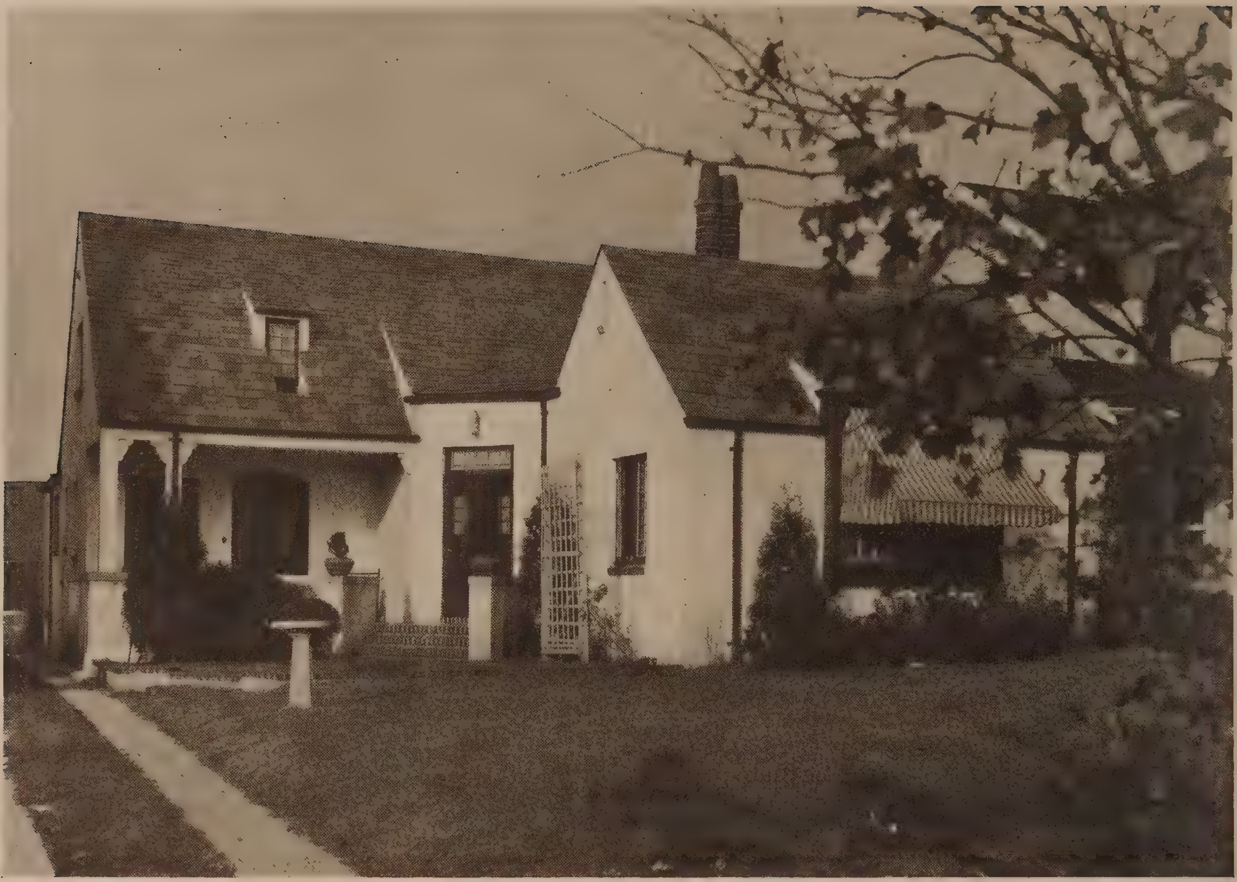
Rippowam Village was built from plans prepared by the Bridgeport Housing Company, under the direction of W. H. Ham, civil engineer, in consultation with Arthur Shurtleff, landscape architect, and Andrew H. Hepburn, of Perry Shaw & Hepburn, architects. The houses were built by the H. Wales Lines Company, of Meriden, Conn., for the Rippowam Development Company.

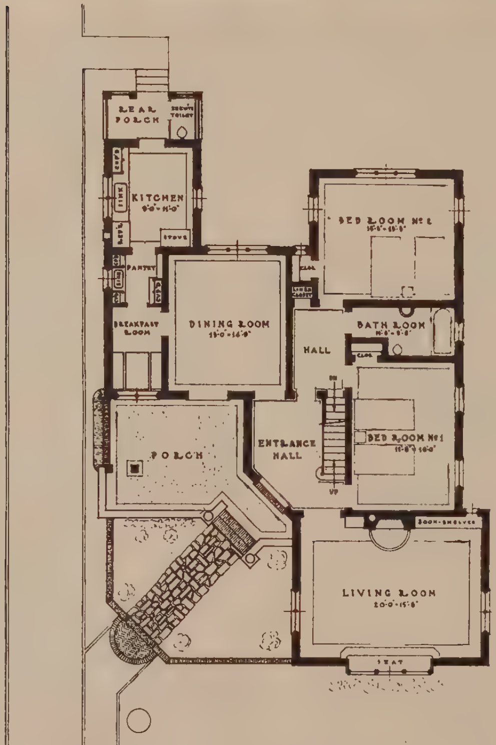




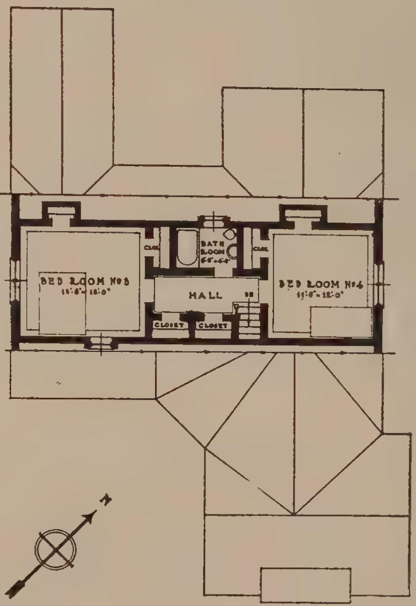


HOUSE, W. E. HARMON, LOS ANGELES, CALIF. Ernest Ratcliffe Harmon, Architect.





·FIRST·FLOOR·PLAN·



·SECOND·FLOOR·PLAN·

RESIDENCE, DOCTOR HEATH NISBET, CHARLOTTE, N. C.

M. E. Boyer, Architect.

Porch detail, residence, Doctor Heath Nisbet, Charlotte, N. C.
M. E. Boyer, Architect.

Results of the Final Competition for the Seventeenth Paris Prize of the Society of Beaux-Arts Architects

Subject: A Transportation Institute.

Jury of Awards: W. A. Delano, R. M. Hood, B. W. Morris, E. S. Hewitt, E. F. Sanford, Jr., W. M. Kendall, G. Lowell, H. Van B. Magonigle, D. E. Waid, A. L. Harmon, R. H. Pearce, and H. O. Milliken—Chairman.

Awards: Placed First and First Medal: Harry K. Bieg, Edmund S. Campbell, Patron, Armour Institute of Technology, and Chicago Atelier, Chicago, Ill.

Placed Second and Second Medal: Samuel R. Moore, Columbia University and Atelier Hirons, New York City, N. Y.

Placed Third and Second Medal: Percival Goodman, Atelier Licht, New York City, N. Y.

Placed Fourth and Second Medal: Elmer L. Babitsky, Atelier Wynkoop-Seymour, New York City, N. Y.

Hors Concourse: Andrew F. Euston, Atelier Hirons, New York City, N. Y.

Donor of Prize: The Paris Prize Committee, Inc.

Announcements

Roy G. Pratt, architect, announces his removal from the Baily Building to 801 Franklin Trust Building, 15th and Chestnut Streets, Philadelphia. He would like to receive samples, etc., at the new address.

W. Wiegand, architect, has moved from 45 West 34th Street to 17 West 42nd Street, New York City.

F. Rosenheim, architect, F. A. I. A., announces the removal of his offices to Suite 515, Broadway Arcade Building, Los Angeles, Calif.

Shea & Shea, architects, announce the removal of their offices to 454 Montgomery Street, between California and Sacramento Streets, San Francisco, Calif.

Tompkins-Kiel Marble Co., 505 Fifth Ave., New York City, announce that their phone numbers have been changed to Murray Hill 7376, 7377, 7378.

Mr. A. F. Wysong, of Wysong & Jones, architects, announces the entrance into the firm of Mr. L. T. Bengtson of Boston, Mass., and Richmond, Va., and the retirement of Mr. T. P. Jones. The firm name has been changed to Wysong & Bengtson, with offices in the Professional Building, Charleston, and at Princeton, W. Va.

Raymond M. Marlier, architect, announces the removal of his office to suite 1001, Empire Building, Pittsburgh, Pa.

Phelps & Koch, architects, announce the opening of new offices at 502 Merchants' Bank Building, Elmira, N. Y. Manufacturers' samples and catalogues are requested.

Happ & Shelverton, architects, Fourth National Bank Building, Macon, Ga., have dissolved partnership. Frank R. Happ will continue the practice of architecture in offices formerly occupied by Happ & Shelverton.

Carl Hartzelius, C. E., architect and engineer, announces the removal of his office to 301 Madison Avenue, New York City.

J. Edward Birmingham, architect, has reopened his office at 45 Warburton Avenue, Yonkers, N. Y., for the general practice of architecture. Current catalogues from manufacturers are desired.

Mr. William Koehl announces the association with him, in the general practice of architecture, of Mr. Antonio DiNardo, formerly with Messrs. Hubbell & Benes. His previous connections include an association with Mr. Arnold W. Brunner, of New York, and a professorship of architecture at Carnegie Institute of Technology. The new partnership will be known as Koehl & DiNardo, Park Building, Cleveland, Ohio.

Callix Edwin Miller, architect, South Bend, Ind., advises us that his former practice as associate architect with Mr. Wm. M. Ellwood, 220 W. Jefferson Boulevard, South Bend, Ind., has terminated and that he has opened new offices at 605 J. M. Studebaker Building for the general practice of architecture. Manufacturers' catalogues and samples will be greatly appreciated.

Edwin L. Rothschild, R. A., architect, announces the removal of his architectural offices to 917 Bankers Trust Building, Walnut and Juniper Streets, Philadelphia, Pa.

Nichols & Sheppard, architects, Windsor, Ontario, Can., announce that they have taken into partnership Mr. George Y. Masson, and the firm will be known as Nichols, Sheppard & Masson, with office in the Dowler Building, Windsor, Ontario.

Hentz, Reid & Adler, architects, announce the removal of their offices from 92½ North Forsyth Street to 1330–1334 Candler Building, Atlanta, Ga.

D. M. Rothenberger, architect, 140 North Queen Street, Lancaster, Pa., moved to 440A Court Street, Reading, Pa.

Apartment-House for Sailors' Snug Harbor, Corner University Place and Ninth Street, New York

Helmle & Corbett, Architects

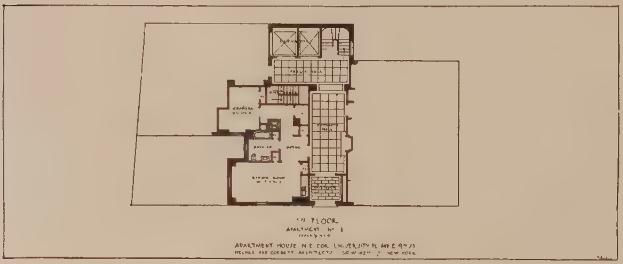
THE apartment-house architect must "have a heart" if the apartment-house dweller is to "have a home." The eight-foot-clear story height now permitted by law means that apartments will be squeezed down to this height in order to get the maximum return out of the property, and the apartment-house dweller will be squeezed into this low-ceilinged space and not asked whether he likes it or not. But for the few remaining city dwellers who recall the high-ceilinged parlor of their youth, and the sense of air and spaciousness which went with it, this modern apartment is a prison cell, to stay out of as much as possible, only to be used as a place in which occasionally to eat, and sometimes to sleep. Is it any wonder the restaurants and movies thrive? Perhaps the radio will keep the poor soul at home, but it will only be done because the noise he hears gives him a mental picture of some bigger and roomier space.

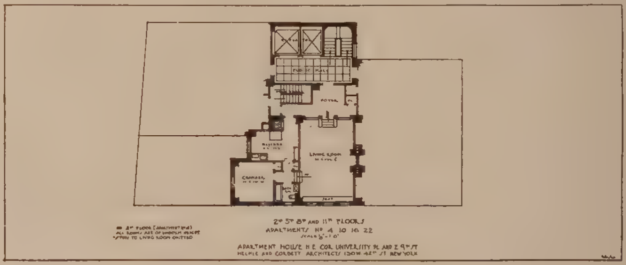
The apartment-house illustrated shows a new idea in plan arrangement whereby the most characteristic feature of the old-fashioned home is retained for the modern city dweller. The apartments vary from three rooms in number in simplex form, up to six room in duplex form, but every apartment, no matter how small or how large, is provided with one good-sized living-room, with a ceiling height equal to that of the old-fashioned city-house parlor, a fireplace that is real, including a chimney that draws, and wall space large enough to hang a real tapestry if the tenant should be fortunate enough to possess one.

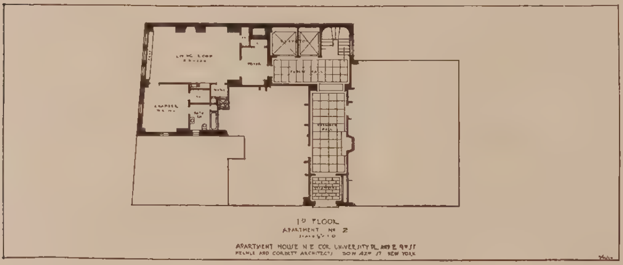
Every other room in each apartment is brought down to the usual permitted ceiling height (in this particular building they are nine feet, as it was built before the law was changed), and they are brought down to the minimum practical area and provided with every modern mechanical convenience. We therefore have a combination of all that modern science and invention have added to the simplification of housekeeping, together with the spacious old-home atmosphere we all so fondly recall but so seldom enjoy.

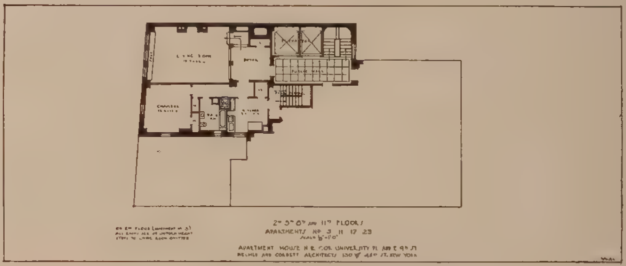
In this particular building, there being but one line of vertical circulation, it was better to "draw in" the corner than to build wasteful hall space to reach it. A corner room is always a desirable thing, and unfortunately only too rare a commodity in the apartment-house field. By this arrangement you will note we make two corner rooms grow where only one grew before.

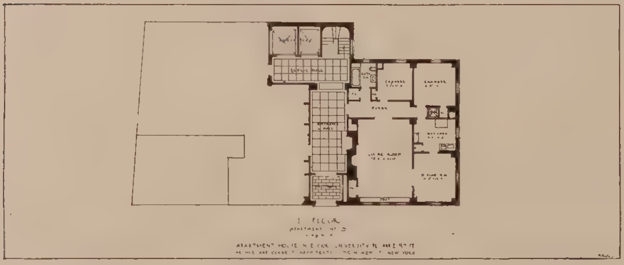
A glance at the section will show the structural device has been used to secure this added ceiling height in the living rooms, without any loss of cubic contents in the other rooms. A comparison between this plan and the usual apartment-house plan shows that it has a larger percentage of rentable floor area in proportion to cubic contents in spite of the high-ceilinged rooms. This is due to the "draw in" of the corner, and the saving of hall space usual in nearly all elevator apartment-houses where the apartments are small in number of rooms.

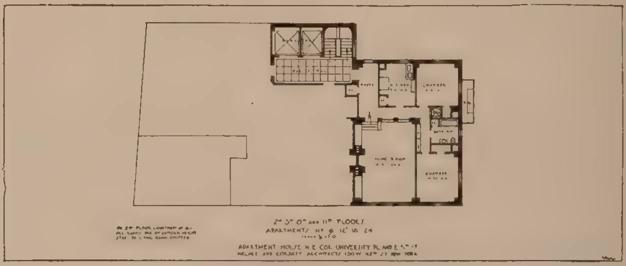

1st FLOOR
APARTMENT No 1
APARTMENT HOUSE N E COR UNIVERSITY PL AND E 9th ST
HELMLE AND CORBETT ARCHITECTS 130 W 42nd ST NEW YORK

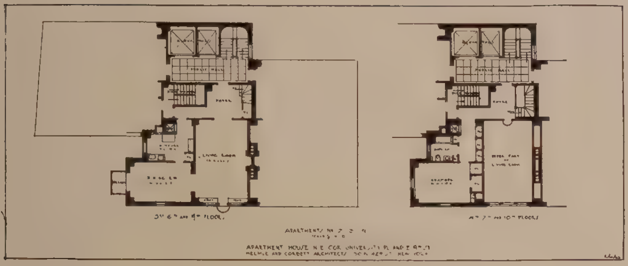

2nd 5th 8th AND 11th FLOORS
APARTMENTS No 4 10 16 22
SCALE 1/8"-1'0"
LIVING ROOM
CHAMBER
APARTMENT HOUSE N E COR UNIVERSITY PL AND E 9th ST
HELMLE AND CORBETT ARCHITECTS 130 W 42nd ST NEW YORK

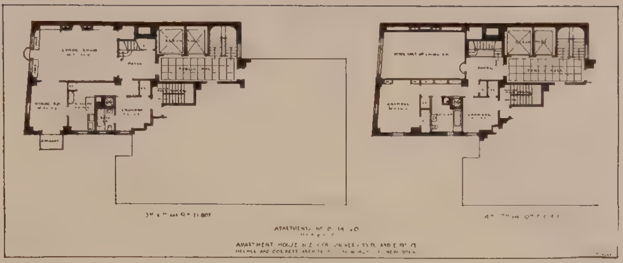

1st FLOOR
APARTMENT No 2
APARTMENT HOUSE N E COR UNIVERSITY PL AND E 9th ST
HELMLE AND CORBETT ARCHITECTS 130 W 42nd ST NEW YORK

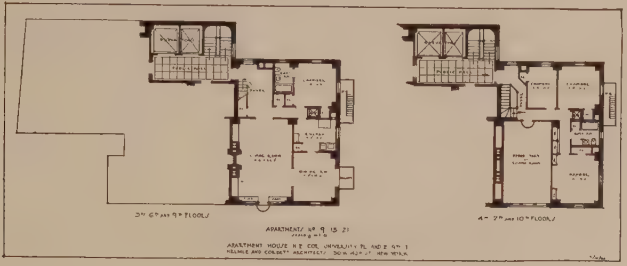

2nd 5th 8th and 11th FLOORS
APARTMENTS No 5 11 17 23
APARTMENT HOUSE N E COR UNIVERSITY PL AND E 9th ST
HELMLE AND CORBETT ARCHITECTS 130 W 42nd ST NEW YORK


1st FLOOR
APARTMENT No 3
APARTMENT HOUSE N E COR UNIVERSITY PL AND E 9th ST
HELMLE AND CORBETT ARCHITECTS 130 W 42nd ST NEW YORK


2nd 5th 8th and 11th FLOORS
APARTMENTS No 6 12 18 24
APARTMENT HOUSE N E COR UNIVERSITY PL AND E 9th ST
HELMLE AND CORBETT ARCHITECTS 130 W 42nd ST NEW YORK


3rd 6th and 9th FLOORS
4th 7th and 10th FLOORS
APARTMENT HOUSE N E COR UNIVERSITY PL AND E 9th ST
HELMLE AND CORBETT ARCHITECTS 50 W 42nd ST NEW YORK


3rd 6th and 9th FLOORS
APARTMENT HOUSE N E COR UNIVERSITY PL AND E 9th ST
HELMLE AND CORBETT ARCHITECTS NEW YORK


3rd 6th and 9th FLOORS
4th 7th and 10th FLOORS
APARTMENTS No 9 15 21
APARTMENT HOUSE N E COR UNIVERSITY PL AND E 9th ST
HELMLE AND CORBETT ARCHITECTS 50 W 42nd ST NEW YORK

Construction of the Apartment-House

By H. Vandervoort Walsh

Professor of Construction, School of Architecture, Columbia University, New York City

ARTICLE XX

Methods of Heating

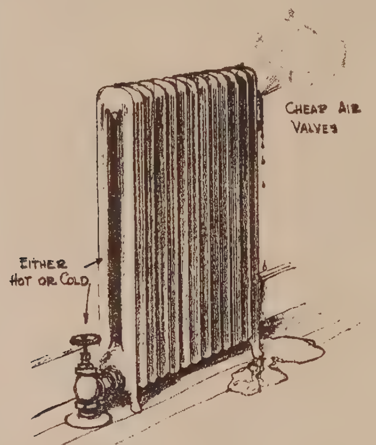
WHEN we consider the methods of heating apartments, we find, as we found to be the case with plumbing, that the system used depends upon the type of building, whether it is a very cheap, a medium, or an expensive structure. We have examples of tenements heated only by stoves or fireplaces. Then, the middle-class apartment is, in general, equipped with a one-pipe steam system. On the other hand, the modern fireproof apartment, of high-class construction, is equipped with a two-pipe system employing valves to give the improved circulation of low pressure or partial vacuum. Hot-water heating does not seem to be installed, except in few cases, in our cold climates, because the habit has been established among people to leave their windows open at night. Such a habit demands a quick-heating radiator in the morning upon rising and a rapid-cooling one at night upon retiring. Then, too, on very cold nights there might be danger of a hot-water radiator freezing. Besides, in the medium-class apartment the cheapest system that can be installed is the one-pipe steam system, and this is the biggest argument in favor of steam to the average builder. In the high-class apartment, this matter of cost might not carry so much weight, but there is a tendency to believe the vacuum steam-heating system is the most flexible for the money. The manufacturers of hot-water heating appliances may have many arguments to refute the above statements, but the fact remains, that the two types of heating apparatus most commonly accepted are *the one-pipe steam for the medium-class apartment and the two-pipe vacuum for the high-class.*

The average system is designed to heat the building to 70 degrees when it is zero outside, although in very cold parts of the country lower outside temperature is assumed as 10 degrees below zero. In the calculations made for medium-class apartments much is left to the whims and judgment of the heating contractor. We have known of many cases where the "necessary amount of radiation" has been very inadequate, simply because the contractor figured it on a standardized formula, giving no consideration to extreme conditions of exposure that allowed high winds in winter to filter in, very rapidly, through the window cracks and the porous masonry walls. The usual method of figuring radiation, given in the hand-books of the past, took no real care of this matter of infiltration of cold air, for the number of air changes per hour assumed for normal rooms and not for very exposed rooms. Only in recent years has more scientific data been collected upon this matter of infiltration of cold air through the cracks, and many heating contractors, who have grown up with the business and are primarily practical men, with a little knowledge of theory derived from hand-books, have not learned the newer methods of calculation. They still go on putting in heating plants as they used to.

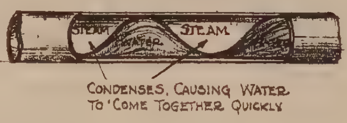
It is well recognized to-day, however, that the way to figure the necessary amount of radiation is to determine the amount of heat lost from a room per hour, if the interior temperature is assumed to be maintained at 70 degrees when it is zero outside, and then knowing the amount of heat lost, supply this with adequate radiators which give off this amount of heat per hour. The heat is lost through the exposed walls and windows and by infiltration through window cracks. By experiments, a certain amount of reliable information has been gathered concerning this heat loss through various types of walls, although there is much to be learned on this score yet, and future investigations may correct our tables. The following list is suited to apartments, since the types of walls most used are selected:

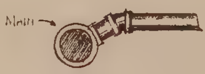
TYPE WALL	BRITISH THERMAL UNITS LOST PER HOUR FOR EACH SQUARE FOOT OF SURFACE WHEN INTERIOR IS 70 DEGREES AND OUTSIDE ZERO
Brick wall furred and plastered:	
8 inches	26.6
12 inches	20.3
16 inches	17.5
Brick wall backed with hollow tile:	
12 inches	12.6
Windows	77.0

If the area of the exposed wall surface in each room be multiplied by its heat loss factor and the area of each window multiplied by its factor and the two added together, the whole will be the heat lost through the walls and windows per hour in British thermal units. But to this must be added the heat lost due to leakage through window cracks.

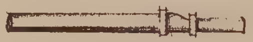


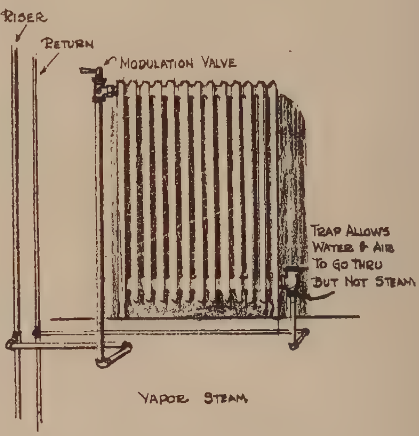
ONE PIPE STEAM TROUBLES

WATER HAMMER




-PREFERRED · BRANCH-


REDUCING STEAM MAIN



VAPOR STEAM

At present the method of setting windows in apartments is to erect the wooden frames and then lay the masonry around them. The frames are thus subject to all the moisture of the new masonry walls, the rainy weather, and the dampness from the plaster. The wood in them accordingly swells. In this enlarged condition they are fitted with sash brought from the mill, and not yet exposed to dampness. These sashes are fitted so that a reasonable crack is left between them and the frame in order that they will slide up and down easily. In careful work a crack of about $\frac{1}{16}$ of an inch is left, but in careless work about $\frac{1}{8}$ inch. During the first winter's operation of the heating plant the window-frames are dried out, and the crack between them is greatly increased, sometimes becoming a $\frac{1}{4}$ inch or more. Then, too, the frame shrinks away from the masonry, allowing a crack around the outside of the frame. This of course, in good construction, is protected by caulking stuffed behind the brick mould. On account of the increase in window cracks due to this action, a heating-plant may be adequate for the first year, but the second year may show a complete failure.

We have measured a number of windows in the average apartment a year or so old, and have found the window cracks to be about $\frac{3}{16}$ inch wide. The common size window is 32 inches by 68 inches, and if we count in the crack between the upper and lower sash there is approximately 232 inches of crack. If we multiply this by $\frac{3}{16}$ inch, we learn that there is the equivalent of a hole 43 inches square in such a window, or if we cut a hole a little bigger than 7 inches square, we would let in through it as much air as comes through the window crack. With a heavy, cold wind blowing, one can easily realize how important is the loss by infiltration.

By assuming an average wind velocity of about 23 miles per hour, the number of cubic feet of air that passes through a $\frac{1}{16}$-inch crack for each foot of length is about 1.9 cubic feet her minute. In the case of the above windows it would be three times this amount, or 5.7 cubic feet of air per linear foot of crack per minute. This is quite a quantity and must be carefully considered if the building is exposed on the top of a hill where it catches the heavy winter winds.

On an average the following amount of heat is considered necessary to offset this leakage loss:

THICKNESS OF CRACK	BRITISH THERMAL UNITS FOR EACH FOOT OF CRACK WHEN OUTSIDE IS ZERO AND INSIDE 70 DEGREES
$\frac{1}{16}$ inch	168
$\frac{1}{32}$ inch	84
Weather-stripped	42

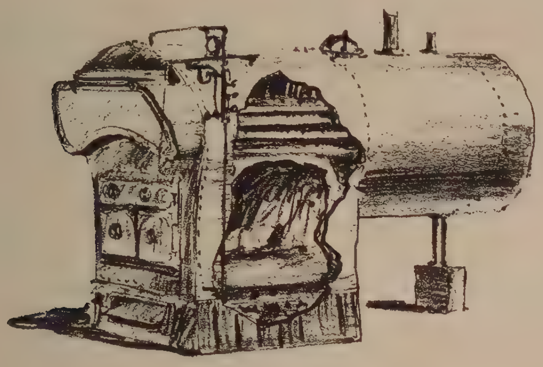
As the wind blows in through the windows on the windward side and out through those on the lee side, in measuring the number of feet of crack it is only necessary to take the side having the greatest length of crack, because this will be the worst condition.

Here is an example which will illustrate the calculations necessary to determine the size of a radiator. The room is 14 feet long on the exposed wall and the ceiling is 9 feet 4 inches high. There are two windows, 32 inches by 70 inches. The room faces east and is sheltered in a court. By calculations, each window has approximately 16 square feet and 19.7 linear feet of crack.

		B. T. U.'s
Gross wall area, 14 x $9\frac{1}{3}$	130	
Window area, 16 x 2	32 x factor 77	equals 2,464
Net wall area	98 x factor 20.3	equals 1,989
Window crack, 19.7 x 2	39.4 x factor 84	equals 3.309
Total		7,762

A steam-radiator gives off approximately 250 British thermal units per hour, so that 7,762 divided by 250 gives

31 square feet, or the radiation required to heat the room. A radiator 38 inches high, having 32 square feet of radiation, was installed. The factor 84 for window crack was chosen in this case correctly, for the room was not exposed to high winds. In the same apartment, though, this same factor was used for those windows on the *north and west side* which looked out over the valley. Although the windows were equipped with metal weather-strips, the leakage was so great that the radiator could not overcome the loss of heat. It was necessary later to install a larger radiator, based on calculations for a crack of $\frac{1}{16}$ inch, in spite of the metal weather-stripping. Even then, the radiator was found to be none too big. In other words, the windows had opened up so much that the metal weather-stripping made them no tighter than those without stripping and having a crack $\frac{1}{16}$ inch.



BOILER

The moral is that in spite of theoretical calculations, the one who figures the radiation must take into account the unusual conditions of exposure and wind pressure, and also the poor workmanship that is commonly done on windows to-day, when everything is rushed from tree to mill, from mill to kiln, from kiln to freight-car, and to the over-speeded work at the building.

When the sizes of radiators are determined for the various rooms, it is customary in estimating the load on the boiler to add to the total radiation in the building 20 per cent to make allowance for loss of heat through pipes. Then from 25 per cent to 75 per cent is added for a factor of safety in selecting the right size boilers. In small apartments only one boiler is installed, but in the larger ones two are put in, each one being capable of taking at least two-thirds of the total load, in order to carry on the heating if repairs are needed on either one.

In all classes of apartments radiators are omitted from bathrooms and kitchens and *riser lines* used, instead, for heating. Also in the rooms where radiators are installed, the riser lines are usually left *exposed in the room* to give additional radiating surface. Metal sleeves and floor-plates are placed around them where they pass through the floors. Due to their movement and heat the plaster on wood lath around them soon falls. Metal lath instead of wood lath would hold it better.

Not much thought is given to the placing of radiators in the average apartment. The riser lines are located in the most convenient and economical places, and then the radiators fitted as near them as possible, even though they spoil the wall space on one side of the room. It is unusual to find in an apartment of a middle class radiators placed under the windows or out of the way.

Radiators in the one-pipe systems are connected to the riser lines with a short elbow of pipe, so that the expansion of the riser will not move the radiator up and down. The bases of all riser lines are connected to the main with a similar elbow. Long pipes over 100 feet have in them expansion-loops.

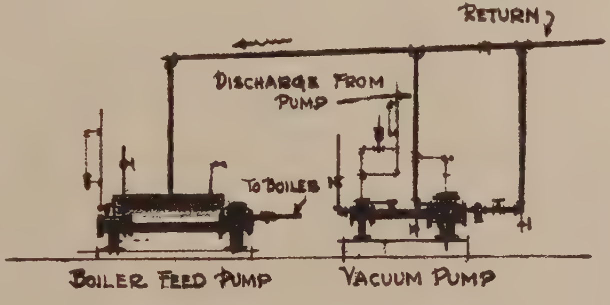
In the basement the steam main rises above the boiler to a point near the ceilings and grades downward (1 inch in 10 feet) around the cellar and back to the boiler. Its final connection with the boiler is made below the water-line. From this main all the vertical riser lines are taken, but since these lines spill back the water of condensation and also carry up the rising stream, their joints with the main are pitched to allow the water to flow back into the main easily.

Now the upward movement of steam in the risers is so fast that it banks up the water of condensation coming down through the same pipe, much the same as a high wind would produce waves in a narrow trough of water. These waves or banks of water catch the steam in between them, and then this trapped steam is condensed to water by the cold pipe, leaving a vacuum between the water waves.

This vacuum sucks the water barriers suddenly together, with sufficient force to make a very loud snapping and crackling in the pipe. In the early morning, when all pipes are cold, this water-hammer is very noticeable, especially if some of the radiators have been shut off over night and then suddenly turned on.

Such knocking and hammering is expected in the average apartment having the one-pipe system, and usually begins about five o'clock in the morning, much to the discomfort of the tenants. But this could be avoided if the pipes were made large enough—a thing not likely to be done in the cheap apartments.

Now as the steam rises in the pipes it forces the air ahead of it. Wherever this air is likely to be trapped there must be placed an automatic air valve to allow it to escape. These air valves are designed to close only when the hot steam comes in contact with them. In many apartments such cheap ones are used that they do not always operate, with the result that steam and water of condensation often escape, ruining decorations and running up repair bills. The various places for these air valves are at the top of riser lines, on all radiators opposite the pipe connection, and at the end of the main where it drops down below the water-line. Of course, even if these air valves do work properly there is always the disagreeable smell of stale air, ejected from the radiators and pipes.



VACUUM STEAM SYSTEM

Another great drawback to this method of heating is its lack of flexibility. As each radiator is designed to warm the air to 70 degrees when it is zero outside, it sends off excessive heat when it is only 20 or 30 degrees outside. To maintain the temperature of the rooms at about 68 or 70 degrees in moderately cool weather the radiators must be shut off and turned on at intervals, something that is not done. The usual condition of the atmosphere in the apartments as a result is extremely bad and unhealthy. Temperatures of 85 degrees are common and the air is drier than that from the desert. Woodwork and structural members are robbed of their water and almost kiln-dried. Floors and partitions settle, trim warps and opens, floor-cracks open wide, furniture rattles at its joints, piano finishes craze, and rapid deterioration goes on everywhere, for plaster is cracked with the movement of the partition studs. Such methods of heating do more damage than can be listed, and although the one-pipe system is the cheapest in the beginning, there are serious doubts as to its economy of operation when this deterioration is counted in on the cost of running. Then, too, the health of the tenants is greatly impaired. No human body can stand the exposure of jumping from a hot, dry air into a cold, damp air. Colds begin with the steam heat in the fall and continue till spring.

These are the reasons why in the better-class apartments a more flexible steam system is installed. The two-pipe vacuum steam-plant operates quietly and the temperature of the radiators can be controlled by modulation valves, and overheating is not apt to occur.

The operation of this type of steam-heating plant is smoother, because the air that is in the radiators and pipes is either pumped out or ejected through an automatic air trap. Where pumps are used the pressure inside of the piping can be lowered below atmospheric pressure, and where only air-vents are used the pressure is reduced to about that of the atmosphere. Under this low pressure, water vapor circulates freely in the pipes, and can be controlled with graduated valves, placed at the top of the radiators. By moving a handle and varying the sizes of ports in the valves the radiators may be one-fourth, one-half, three-fourths, or completely filled with steam.

At the other end and bottom of the radiators are automatic valves that allow the heavy air and water of condensation to pass through them, but close when the steam touches them. Thus the return pipes are quite small, since they carry only water and air.

Now there is a slightly different arrangement of steam main in the basement compared to the one-pipe system. It rises above the boiler to a high point and then pitches downward and around the cellar, until it has fed all of the riser lines, when it drops down below the water level of the boiler and returns as a small pipe. However, the end is connected to another pipe above the water level that goes around the cellar parallel with the main but pitches toward the boiler. This pipe, or dry return, receives the return lines of all of the radiators and the end connection of the main. It carries back, toward the boiler, air and water. Before dropping the water back into the boiler the pipe goes through the ejector or vent trap, where the air is released. Thus all of the air in radiators and pipes is released through one vent, instead of through air valves on each radiator.

Where vacuum pumps are used a more positive acting system results. The pump creates a pressure below atmospheric on the return lines and radiators, so that when the steam is turned into the system it quickly flows through the pipes to fill the radiators. When it reaches the valves at the return ends of the radiators it is blocked and kept in them until condensed to water, when it can pass through the automatic valve. The water of condensation, from the radiator and also the air, drop to the lowest point of the system and are forced by the vacuum pump into the air-separating tank, where the air is released to the atmosphere and the condensation is sent back to the boiler by a boiler feed pump.

Thus positive circulation of steam is assured, no water-hammer is developed, air pockets do not keep parts of the radiators cold, leaky air valves do not spill water on the floors nor obnoxious stale air into the rooms. The radiators are flexible in heating. Unlike the one-pipe system, operated under pressure, in which the radiators in this system can be partially filled with steam according to the position of the valve.

The type of boilers which are generally installed in either the medium-class or high-class apartments are the so-called firebox boilers. These are built of mile, open-hearth steel, and are good for 60 pounds pressure. The firebox, grate, and boiler proper are one and are set up on a brick foundation. In order to save heat, the sides of the firebox are surrounded by a water-jacket. The gases from the fire pass through tubes in the boiler to the back and return to the front and out through the breeching to the chimney. The capacity of these boilers ranges from 500 square feet to 13,000 square feet of radiation, depending upon the size. The average large fireproof apartment has three boilers of about 10,500 square feet capacity, measuring about 5 feet in diameter and 16 feet in length. Medium-size fireproof apartments have two boilers, whereas the non-fireproof walk-ups have one. Of course, the actual size depends upon calculations and especially conditions of the building.

(*To be continued.*)

Bureau of Standards to Measure Fatigue of Stone

IT has long been known that a load much below its apparent breaking strength would cause failure of stone after a long time. The Bureau of Standards is now undertaking a series of tests to determine the extent of this effect and to see how much load can safely be borne by stone for indefinite periods.

Samples of stone will be tested both in straight compression and in bending. Loads will be put on and left there, and the deflection of the stone will be measured from time to time.

Marble has the peculiar quality of sagging slowly, even under its own weight. Thus many cases are known in which marble slabs placed in horizontal position for a hundred years or so have sagged down several inches; and thin tombstones of marble have bent over.

Reclaiming Forest Land in the Lake States

COMPARISON of the growth of white pine, Norway pine, and jack pine planted in the Lake States region is being made by experts of the Forest Service, United States Department of Agriculture, with the purpose of determining with which species the old cut-over forest lands of these States may be reclaimed for timber growing. On favorable soil white pine appears to be most suitable, followed by Norway pine and jack pine practically equal in value.

On the poorer, sandier sites, however, white pine must be preceded by the hardier though less productive pines. White pine plots showed an average annual production ranging from 74 to 101 cubic feet an acre at ages from 35 to 65 years, while Norway and jack pine range from 54 to 71 cubic feet. Hardwoods as aspen, though on better soils, grow much more slowly and produce at corresponding ages only from 27 to 56 cubic feet a year.

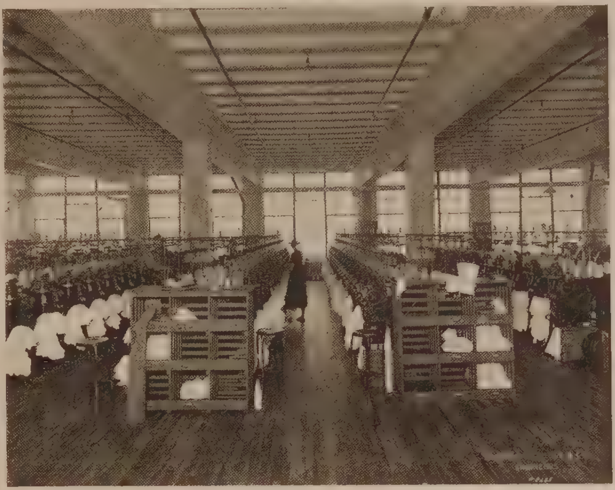
Plant of Allen & Company, Kenosha, Wis.

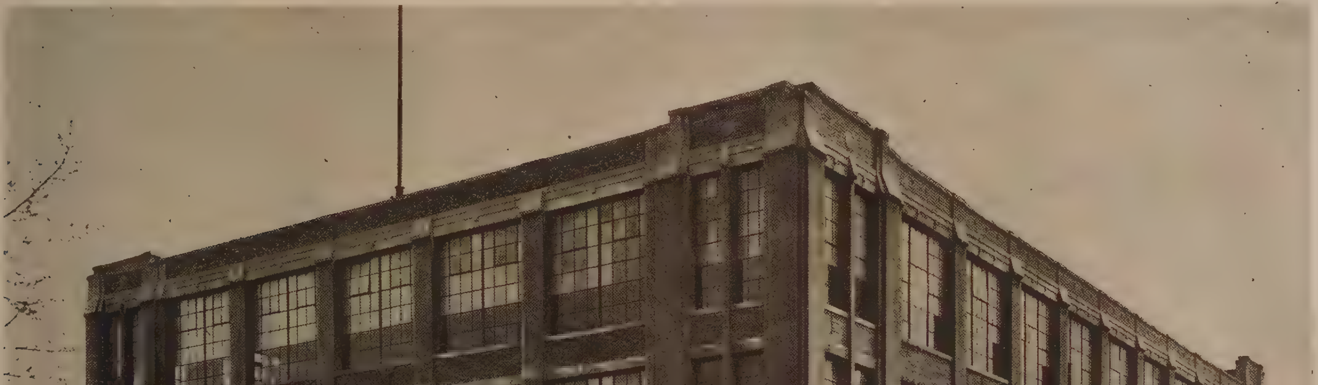
THIS plant is 92 feet by 152 feet, of reinforced concrete construction. The building is wired throughout for either Mazda or Cooper-Hewitt lights, separate circuits and outlets being provided for each system. The floors are of maple, laid on two-inch plank and bedded in about one-half inch of dry sand. All floor covering is linoleum, except in private offices, where cork tile is used

The general offices are on the first floor, and the upper three floors are devoted to manufacturing. The interior picture (fourth floor) shows the installation of seamless knitting machines. At the right of this picture the installation of Glassteel lighting units is shown.

The plant has a 40,000-gallon sprinkler tank installed to allow for an additional story on the building.

The cast-bronze medallion over entrance (picture of doorway) shows the company trade-mark.





Lockwood, Greene & Co., Engineers and Architects.

A Manual of Office Practice

By Frederick J. Adams, A. I. A.

SIXTH ARTICLE

Note possibility of combining with Form No. 12, Building Programme, and Form No. 12A, Drawing Programme.

Immediately an operation is started tracing-cloth copy of the form should be made, allowing the necessary number of divisions to include the headings to be reported on. Dimension the whole sheet to fold to letter size for filing. The headings are to be listed in the sequence of occurrence and related progress appropriate to the operation to be covered. Note should be made of the items included under each heading (see Checking List). Where the proposed work is very extensive the headings should be arranged in three groups to permit recording of progress separately for rough, finish, and plant. Block out the horizontal floor divisions in any item column in which work under that heading will not appear.

In each floor division of each item column note the percentage of the whole of such item as occurs in said floor.

If shop progress is to be reported show immediately preceding each trade to be covered.

"Rough" includes all work, the placing of which should precede or accompany the construction of, and to be incorporated in, any wall, floor, or roof, other than where space allowance is the only requirement affecting such construction. All plastering, grounds, and bucks are generally classed as "rough."

"Finish" covers all work applied upon or connected to "rough," or placed within space conditions provided under "rough," and the incidence of which does not affect the time of construction of the "rough."

The report is to be made up weekly by dating the original and indicating the progress of any heading in any horizontal division in which work has been done, by inking in over the faint guide lines.

Show progress of each item by straight line from point of beginning ending in a dot at the estimated percentage. Indicate delays or stoppages by a short horizontal line, to be joined back to the guide line by a diagonal when work is resumed and progresses to the next percentage level.

Immediately the report is completed each week make blue-print copies as follows: One for the file (to be given to the member of the firm in charge), one to the superintendent, and such other copies as are required.

The superintendent should use his copy for noting the progress of the following week.

By selection of appropriate headings the form can be used for reporting progress on practically any sort of operation, such as the finish in a single room, or the work of a single trade, or the preparation of drawings.

When operation is completed, one copy of the final report should be filed with the "operation record" (see Form No. 15).

Form No. 11 Items for Report

Rough Schedule

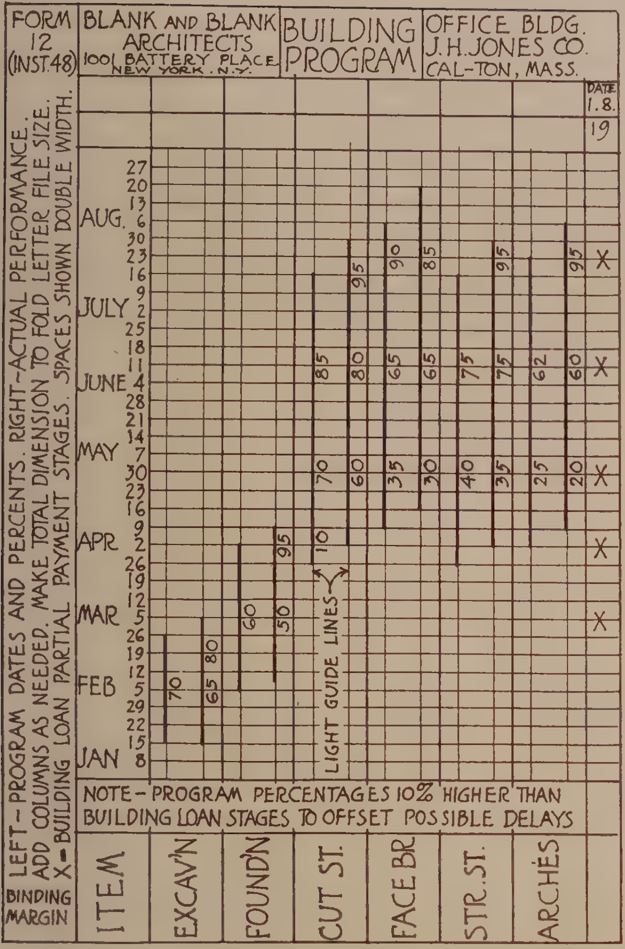
HEADINGS	DIVISION	INCLUDED.
Excavation	Earth	
	Rock	
Piling	....	
Structural concrete	....	Footings, grillage casings, subgrade walls
Framing	Grillages	
	Columns	
	Floors	
Stairs	Rough	
Arches	Rough	
Plumbing	Rough	Risers, underground lines, high tanks, fire lines
	Branches	
	Covering	
Heating	Rough	Risers
	Branches	
	Covering	
Brickwork	....	Structural and enclosing other than back-up
Water-proofing	....	
Cut stone	....	Including back-up work
Terra-cotta	....	" " "
Face brick	....	" " "
Rough carpentry	....	Centres, bucks, sleepers, window-frames
Structural metal work	....	Miscellaneous or ornamental built-in
Elevator	Rough	Guides, gratings, machine beds
Refrigeration	Rough	Risers
	Branches	
	Covering	
Other pipe systems	Rough	Risers
	Branches	
	Covering	
Electric	Rough	Feeders, panel boxes, outlets
	Branches	Outlets
Partitions	Masonry	
Ventilation	Rough	Ducts, thermostat piping
Furring & lathing	Typical	General requirements
	Special	Special room requirements
Plastering	Scratch	Behind tile, etc.
	Brown	
	White	
Plastering	Special	Special rooms white
Roofing, sheet metal	....	

Plant Schedule

Plumbing	....	Pumps, cellar tanks, etc.
Heating	....	Boilers, tanks, etc.
Ventilating	....	Fans, blowers, filters, etc.
Electric	....	Switchboard, motor-wiring, etc.
Refrigeration	....	Machinery, tanks, coils
Vacuum cleaning	....	Machinery
Other pipe systems	....	Machinery

Finish Schedule

Marble	Ordinary	Exclusive of stair-work
	Special	
Mosaic, terrazzo, tile		
Cement fls. fill, base		
Trimming	General	
	Special	Cabinetwork, special rooms
Stair finish	....	Including all items
Ornamental metal	....	
Glazing	....	Including skylights
Plumbing fixtures	....	
" accessories	....	
Heating	....	Radiators, thermostats
Ventilating	....	Registers, etc.
Electric	Wiring	
	Finish	Panel finish, switch covers, etc.
Elevator	"	Signals, cab, floor, gate
Cleaning down	Exterior	
	Interior	
Painting	General	
	Special	
Lighting fixtures	....	



FORM 12 (INST.48)
BLANK AND BLANK ARCHITECTS
1001 BATTERY PLACE NEW YORK. N.Y.

BUILDING PROGRAM

OFFICE BLDG.
J.H.JONES CO.
CAL-TON, MASS.

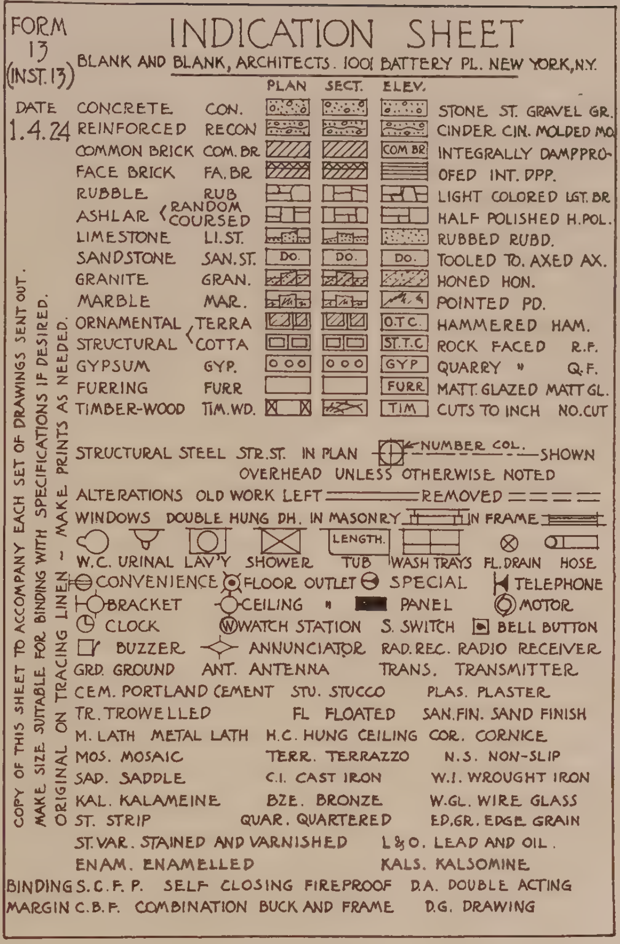
DATE 1.8.19

LEFT - PROGRAM DATES AND PERCENTS. RIGHT-ACTUAL PERFORMANCE.
ADD COLUMNS AS NEEDED. MAKE TOTAL DIMENSION TO FOLD LETTER FILE SIZE.
X - BUILDING LOAN PARTIAL PAYMENT STAGES. SPACES SHOWN DOUBLE WIDTH.

NOTE - PROGRAM PERCENTAGES 10% HIGHER THAN BUILDING LOAN STAGES TO OFFSET POSSIBLE DELAYS

BINDING MARGIN

ITEM	EXCAV'N	FOUND'N	CUT ST.	FACE BR	STR. ST.	ARCHES	



FORM 13 (INST. 13)

INDICATION SHEET

BLANK AND BLANK, ARCHITECTS. 1001 BATTERY PL. NEW YORK, N.Y.

DATE 1.4.24

		PLAN	SECT.	ELEV.		
CONCRETE	CON.	▨	▨	▨	STONE ST.	GRAVEL GR.
REINFORCED	RECON	▨	▨	▨	CINDER CIN.	MOLDED MO.
COMMON BRICK	COM. BR	▨	▨	COM BR	INTEGRALLY DAMPPRO-OFED	INT. DPP.
FACE BRICK	FA. BR	▨	▨	▨		
RUBBLE	RUB	▨	▨	▨	LIGHT COLORED	LGT. BR
ASHLAR	RANDOM COURSED	▨	▨	▨	HALF POLISHED	H.POL.
LIMESTONE	LI. ST.	▨	▨	▨	RUBBED	RUBD.
SANDSTONE	SAN. ST.	DO.	DO.	DO.	TOOLED TO.	AXED AX.
GRANITE	GRAN.	▨	▨	▨	HONED	HON.
MARBLE	MAR.	▨	▨	▨	POINTED	PD.
ORNAMENTAL	TERRA COTTA	▨	▨	O.T.C.	HAMMERED	HAM.
STRUCTURAL	TERRA COTTA	▨	▨	ST.T.C.	ROCK FACED	R.F.
GYPSUM	GYP.	o o o	o o o	GYP	QUARRY "	Q.F.
FURRING	FURR	☐	☐	FURR	MATT. GLAZED	MATT GL.
TIMBER-WOOD	TIM. WD.	☒	▨	TIM	CUTS TO INCH	NO. CUT

STRUCTURAL STEEL STR. ST. IN PLAN —NUMBER COL.— SHOWN OVERHEAD UNLESS OTHERWISE NOTED

ALTERATIONS OLD WORK LEFT ═══ REMOVED ═ ═ ═

WINDOWS DOUBLE HUNG DH. IN MASONRY IN FRAME

W.C. URINAL LAV'Y SHOWER LENGTH. TUB WASH TRAYS FL. DRAIN HOSE

CONVENIENCE FLOOR OUTLET SPECIAL TELEPHONE

BRACKET CEILING " PANEL MOTOR

CLOCK WATCH STATION S. SWITCH BELL BUTTON

BUZZER ANNUNCIATOR RAD. REC. RADIO RECEIVER

GRD. GROUND ANT. ANTENNA TRANS. TRANSMITTER

CEM. PORTLAND CEMENT STU. STUCCO PLAS. PLASTER

TR. TROWELLED FL FLOATED SAN. FIN. SAND FINISH

M. LATH METAL LATH H.C. HUNG CEILING COR. CORNICE

MOS. MOSAIC TERR. TERRAZZO N.S. NON-SLIP

SAD. SADDLE C.I. CAST IRON W.I. WROUGHT IRON

KAL. KALAMEINE BZE. BRONZE W.GL. WIRE GLASS

ST. STRIP QUAR. QUARTERED ED.GR. EDGE GRAIN

ST. VAR. STAINED AND VARNISHED L & O. LEAD AND OIL.

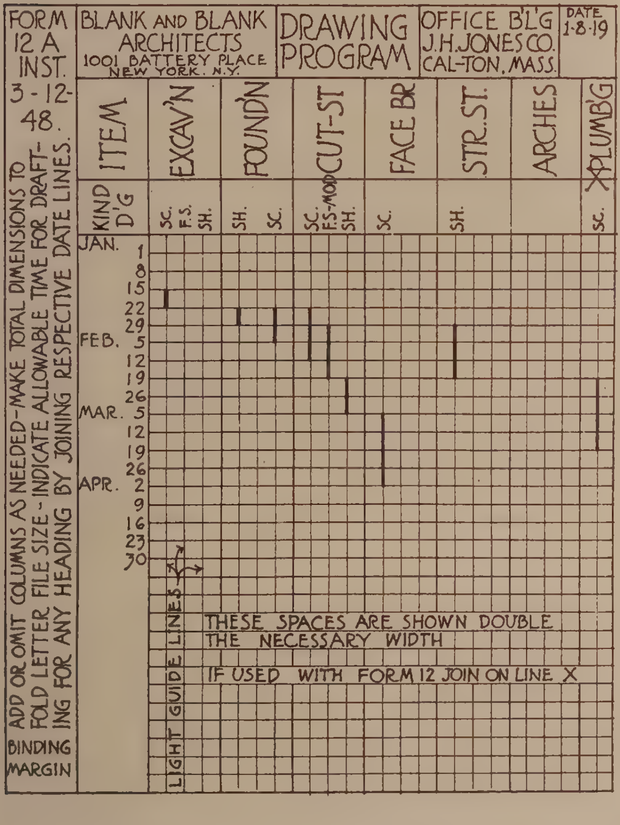
ENAM. ENAMELLED KALS. KALSOMINE

S.C.F.P. SELF CLOSING FIREPROOF D.A. DOUBLE ACTING

C.B.F. COMBINATION BUCK AND FRAME D.G. DRAWING

BINDING MARGIN

COPY OF THIS SHEET TO ACCOMPANY EACH SET OF DRAWINGS SENT OUT.
MAKE SIZE SUITABLE FOR BINDING WITH SPECIFICATIONS IF DESIRED.
ORIGINAL ON TRACING LINEN - MAKE PRINTS AS NEEDED.



FORM 12 A INST. 3-12-48.
BLANK AND BLANK ARCHITECTS
1001 BATTERY PLACE NEW YORK. N.Y.

DRAWING PROGRAM

OFFICE B'L'G
J.H.JONES CO.
CAL-TON, MASS.

DATE 1-8-19

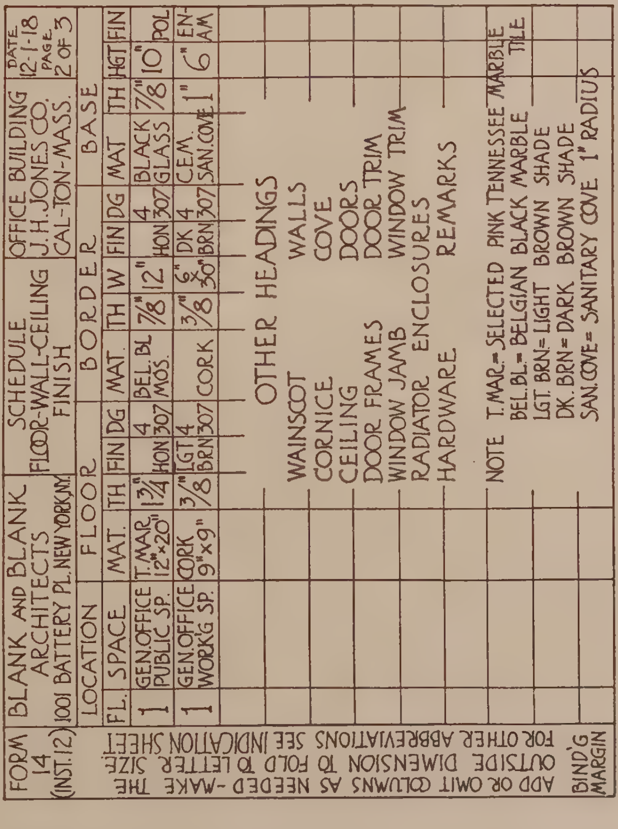
ADD OR OMIT COLUMNS AS NEEDED - MAKE TOTAL DIMENSIONS TO FOLD LETTER FILE SIZE - INDICATE ALLOWABLE TIME FOR DRAFTING FOR ANY HEADING BY JOINING RESPECTIVE DATE LINES.

BINDING MARGIN

ITEM	EXCAV'N	FOUND'N	CUT-ST	FACE BR	STR. ST.	ARCHES	X PLUMB'G
KIND D'G	SC. F.S. SH.	SH. SC.	SC. F.S.-MOD SH.	SC.	SH.		SC.

THESE SPACES ARE SHOWN DOUBLE THE NECESSARY WIDTH

IF USED WITH FORM 12 JOIN ON LINE X



FORM 14 (INST. 12)
BLANK AND BLANK ARCHITECTS
1001 BATTERY PL. NEW YORK, N.Y.

SCHEDULE FLOOR-WALL-CEILING FINISH

OFFICE BUILDING
J.H. JONES CO.
CAL-TON-MASS.

DATE 12-1-18
PAGE 2 OF 3

LOCATION		FLOOR				BORDER					BASE			
FL.	SPACE	MAT.	TH	FIN	DG	MAT.	TH	W	FIN	DG	MAT	TH	HGT	FIN
1	GEN. OFFICE PUBLIC SP.	T. MAR. 12"×20"	1 3/4	HON	4 307	BEL. BL MOS.	7/8"	12"	HON	4 307	BLACK GLASS	7/8"	10"	POL
1	GEN. OFFICE WORK'G SP.	CORK 9"×9"	3/8"	LGT BRN	4 307	CORK	3/8"	6"×30"	DK BRN	4 307	CEM. SAN. COVE	1"	6"	EN-AM

OTHER HEADINGS

WAINSCOT WALLS

CORNICE COVE

CEILING DOORS

DOOR FRAMES DOOR TRIM

WINDOW JAMB WINDOW TRIM

RADIATOR ENCLOSURES

HARDWARE REMARKS

NOTE T. MAR. = SELECTED PINK TENNESSEE MARBLE TILE
BEL. BL. = BELGIAN BLACK MARBLE
LGT. BRN. = LIGHT BROWN SHADE
DK. BRN. = DARK BROWN SHADE
SAN. COVE = SANITARY COVE 1" RADIUS

ADD OR OMIT COLUMNS AS NEEDED - MAKE THE OUTSIDE DIMENSION TO FOLD TO LETTER SIZE
FOR OTHER ABBREVIATIONS SEE INDICATION SHEET

BIND'G MARGIN

Form No. 15 OPERATION RECORD Instruction 57

BLANK & BLANK, ARCHITECTS
1001 Battery Place, New York, N. Y.

Operation *Office building J. H. J. . . . s Co.* Page 1
Address *Cal. . . . ton, Mass.* Date 9/3/20

Bldg. Permit No.	*N. B.* 78/1919	Plg. & Drg. Per. No.	*P. D.* 101/19
Mem. firm in chg.	*C. A. B. . . . k*	Spec. by	*J. . . . n D. . . .*
Drafts'n in chg.	*R. M. . . . r*	Supdt.	*J. H. A. . . . s*
Str. Eng.	*R. M. . . . r*	H & V Eng.	*T. . . . d & M. . . . b Co.*
San'y Eng.	*T. . . . d & M. . . . b Co.*	Elec. Eng.	*J. & T. D . . . s*
General cont.	*Over. . . . k Construction Co.*		
Work started	*Jan.* 15, 1920	Comp.	*Aug.* 28, 1920
Type bldg.	*Firep'f—Sprink'd*	Hgt. above gr.	71 *ft. S-B, B,* 6 *sts.*
Cost excl. archts.	$511,000	Cu. ft. cost	.65
Cost mech. equip.	$35,000	Cost spec. room fin.	$16,000
Lot area	200 x 110	Cu. con.	787,000 *cu. ft.*
Ground fl. area	9,000	Typ. fl. area	7,500
Gross ren. area	49,000	Ratio to cube	1 *to* 16
Net ren. area	45,000	Ratio to gr. ren.	92%
Pass. elevs.	3. Type *Gd. trac.*	Speed	500. Rat. gr. ren. 1 *to* 15
Sarv. elevs.	1. Type *Gd. trac.*	Speed	400. Rat. gr. ren. 1 *to* 49

Description: *Make mention of outstanding characteristics of the structure as to exterior and interior finish, important items of equipment, if for public assemblage the number of sittings, if a private residence the number of master's rooms, baths, etc., service accommodation. In general the effort should be to record particulars which would be of value for comparisons with other similar projects. In important work this result can be more readily obtained by a quantitative analysis of each trade which also will show the proportion which the trade bears to the whole. In all cases a complete list of the subcontractors should be kept.*

SUBCONTRACTS

TRADE OR ITEM	NAME	ADDRESS	AMT.	PER CENT
. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .

THE END.

Book Reviews

THE ARCHITECT'S LAW MANUAL. By Clinton Blake, Jr., A.M., LL.B. The Pencil Points Press, New York.

Mr. Blake has no intention of making every architect his own lawyer —he is still in practice—but he has presented a vast amount of valuable information that may save the architect from many needless legal troubles.

Such matters as The Business Side of Architecture, The Contract Between Architect and Client, The Contract Between Owner and Contractor, Representations or Guarantees With Respect to Cost, Acting as Contractor or Principal, Sketches and Plans, The Title to Plans, Supervision, Competitions, Dealings with Corporations and with the Government, The Lien of the Architect, The Registration of Architects, The Architect as Agent, Termination of Architect's Employment, are discussed clearly and with full knowledge. A complete set of the Forms and Documents of the American Institute of Architects is included.

This is a book that should belong to every architect's working library.

AMERICAN COLONIAL ARCHITECTURE, ITS ORIGIN AND DEVELOPMENT. By Joseph Jackson. David McKay Co., Philadelphia.

This is a rather pretentious title for such a small book, made up of chapters contributed to the magazine *Building*. It may serve to whet the appetite for more complete information on an always fascinating subject.

THE AMERICAN HOSPITAL OF THE TWENTIETH CENTURY. A Treatise on the Development of Medical Institutions, both in Europe and in America, since the beginning of the present century. By Edward F. Stevens, Architect. Revised edition. The Architectural Review Co., N. Y.

We have previously referred to the great value of this book. It covers a field of the utmost importance and includes the most recent and approved methods of construction and equipment. The numerous illustrations, elevations, plans, interiors, etc., are especially valuable.

A SYSTEM OF ARCHITECTURAL ORNAMENT ACCORDING WITH A PHILOSOPHY OF MAN'S POWERS. By Louis H. Sullivan, Architect. Press of the American Institute of Architects.

Louis Sullivan was a dreamer of beautiful dreams, a mystic, a man of the beyond. Fancy, imagination, a sheer love of the beautiful, of rhythmical form, are made manifest in these lovely drawings.

One need not follow him into the realms of the abstract, to come within the aura of his ego, to appreciate and enjoy this book. Refinement of expression, delicacy, an innate sense of beauty are all here. In them we almost feel that we envision the man himself. He was ahead of his time. "The dreamer-man becomes the seer, the mystic, the poet, the prophet, the pioneer, the affirmer, the proud adventurer."

WOODWORKING MACHINERY. By William Noyes, M.A. The Manual Arts Press, Peoria, Ill.

It is the fourth book in Professor Noyes's series on woodworking. The first was entitled "Handwork in Wood." This came out in 1910. Then followed "Wood and Forest" in 1912, and "Design and Construction in Wood" in 1913. They are all bound in the same style and make an excellent "Woodworkers' Library."

The present volume, "Woodworking Machinery," is the first book to deal with the subject in a practical and unprejudiced way for the use of schools.

SMALL HOUSES FOR THE COMMUNITY. By C. H. James, Associate of the Royal Institute of British Architects, and F. R. Yerbury, Secretary of the Architectural Association. With a foreword by Raymond Unwin, Dr. Tech, H. C. Prague, Chief Architect (Housing) Ministry of Health. Crosby, Lockwood & Son, London.

"It is the intention of this book to place on record for the use of those to whom they may be of value some of the best examples of completed work, showing that it is possible to carry out housing schemes and build small houses without either outraging the æsthetic sense on the one hand, or ignoring the question of cost on the other.

"The introductory chapters deal with the various problems which arise in connection with the general layout of schemes, the use of materials, and the actual design and planning of the small houses.

"A complete specification and set of quantities for a group of small houses have been incorporated.

"The illustrations include plans and specially taken photographs of various schemes, and types of small houses erected under various conditions, examples built in various materials, and also a number of details of doors, fire-places, windows, etc., inexpensively made, but of satisfactory design.

"A few examples from Holland, Denmark, and Sweden have been added. Those from the last-named country are especially interesting in that they show how timber may be used for modern house-building with eminently satisfactory results."

England's housing problem has been even more acute than our own. At the close of the war it was estimated that there was a shortage of three hundred thousand. The normal requirements of between seventy-five and one hundred thousand are not yet being met. In regard to the slum areas the author says that the problem remains "practically untouched."

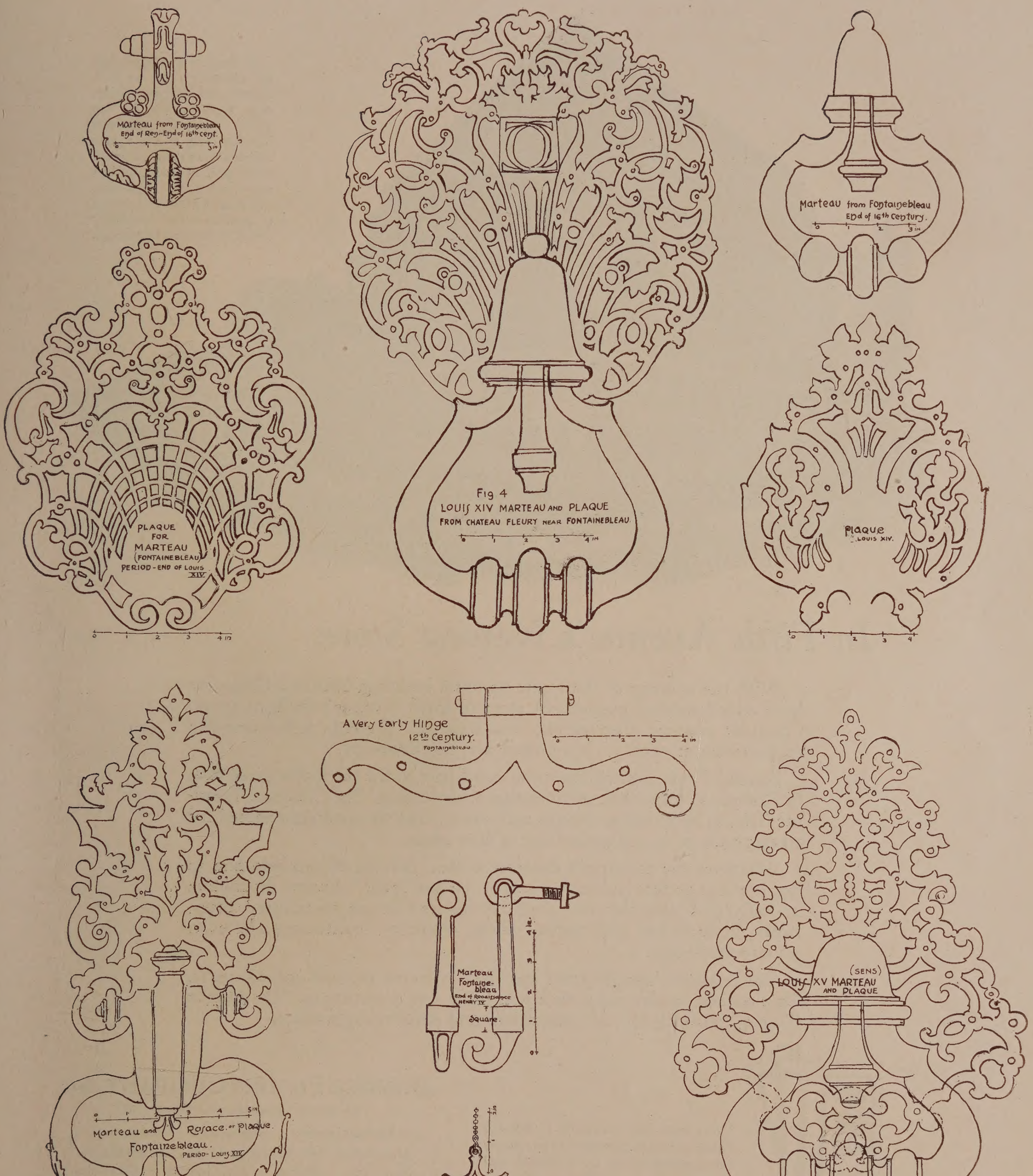
In England the private builder of small houses to let has gone forever.

The single cottage standing alone is a thing of the past, groups of four to sixteen are the common order of things to-day, and from the many illustrations in this book we are inclined to think that the English architects are solving this group arrangement in an attractive and economical way. There is necessarily simplicity of design shown in the various developments, but in this very simplicity lies the charm of the English village and countryside.

There are many things shown in this book that we commend to our American architects, especially in this growing need for multiple family houses in our suburbs.

The gardens and courts are always attractive features of the English village growth.

In the examples included from Holland, Sweden, and Denmark, there are individuality and a native picturesqueness also well worth the study of some of our small-house designers. A group of fourteen "labor-saving" houses at Welwyn, Garden City, England, includes a block and drainage plan, elevations, plans, and sections. These pages of detail drawings, chapters on "Selection of the Site," "Economics," "Site Planning," "Design and Material," "Construction and Internal Arrangement," and the many plates and plans are all worth study.



SOME OLD FRENCH HARDWARE.

Drawn by Samuel E. Gideon

In the new $5,000,000 Saks and Company store, on Fifth Avenue and Fifty-first Street, New York, Starrett & Van Vleck, architects, *Gold-Seal* Treadlite Tile, in a mahogany and stone gray design, is extensively used. Noiseless, resilient and comfortable under-foot, this Bonded Floor adds a touch of distinction that beautifully sets off all the other furnishings.

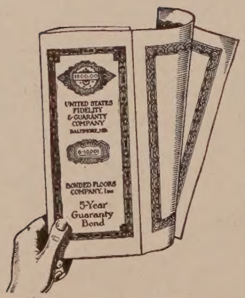
In Fifth Avenue's Newest Store

With the opening of their new up-town building, Saks and Company have added another magnificent store to Fifth Avenue's brilliant array. Carefully planned throughout, this structure presents a business-like combination of beauty, convenience and serviceability.

Bonded Floors contribute in no small part to the justifiable pride Saks & Company feel in their monumental achievement. For *Gold-Seal* Treadlite Tile, in harmonious designs and colors, was the medium selected for an aggregate of 50,000 square feet of floor space.

Whatever the architect's decorative plan, Bonded Floors help him to execute it in perfect harmony down to the last detail. Always distinctive in design and color, they are admirably adapted for use in exclusive stores, banks, libraries and club rooms, offices, churches, institutions and even private residences.

Our designers are prepared to evolve patterns to meet special needs. Or a request to our main office will bring you literature on "Distinctive Floors," showing typical illustrations and pattern suggestions.


UNITED STATES FIDELITY & GUARANTY COMPANY
BONDED FLOORS COMPANY, Inc
5-Year Guaranty Bond

Every floor laid according to Bonded Floors specifications is backed by a Surety Bond issued by the U. S. Fidelity and Guaranty Company. The bond insures freedom from repair expense due to defects in materials or workmanship.

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Division of Congoleum Company, Inc.
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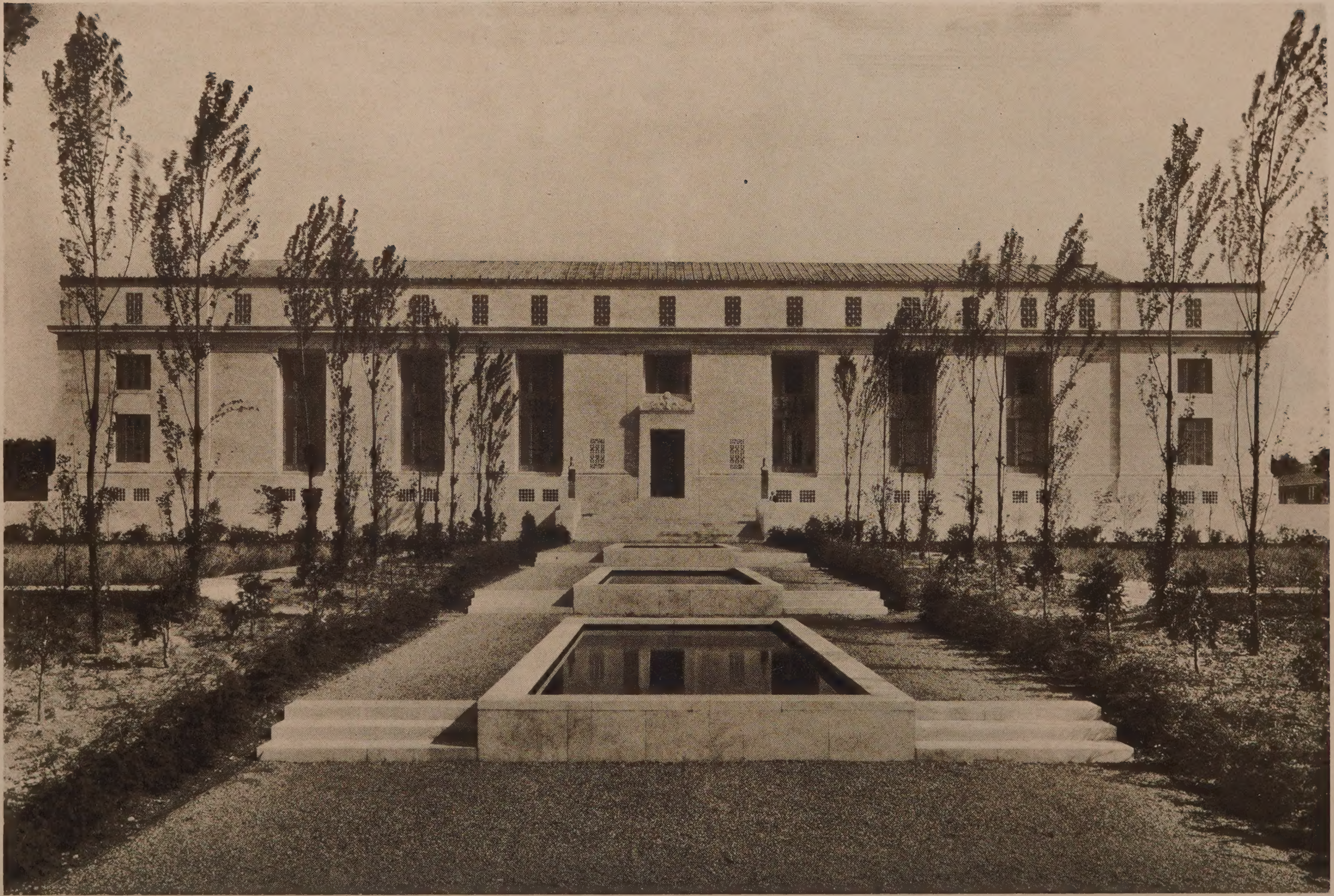

THE BUILDING OF THE NATIONAL ACADEMY OF SCIENCES AND NATIONAL RESEARCH COUNCIL, WASHINGTON, D. C. Bertram Grosvenor Goodhue, Architect.